COMPARATIVE VIEW

OF THE

THEORIES AND PRACTICE

OF

Drs. *CULLEN, BROWN, AND DARWIN,*

IN THE

TREATMENT OF

FEVER,

AND OF

ACUTE RHEUMATISM.

> " By the colliſion of different ſentiments, ſparks of truth are
> " ſtruck out, and light is obtained."
>
> FRANKLIN's Eſſays.

By HENRIQUE XAVIER BAETA, M.D.

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1800.

TO DOCTOR IGNACIO TAMAGNINI.

MY DEAR SIR,

I AM extremely happy, in having an opportunity of thus paying a ſincere, though ſmall tribute of regard to the medical abilities, and amiable manners, which have ſo juſtly entitled you to the reputation of one of the firſt medical practitioners in the city of Liſbon.

I remain, Sir,
with great reſpect,
Your moſt obedient and
humble Servant,

HENRIQUE XAVIER BAETA.

London,
Aug. 1ſt, 1800.

PREFACE.

AFTER giving a general view of a few Caſes of each diſeaſe *, I ſhall enter into an inveſtigation of the theories of Drs. Cullen, Brown, and Darwin. In doing which, if I ſhall be able to demonſtrate, that the theory of Dr. Darwin explains the phenomena of the diſeaſes mentioned, better than thoſe of Cullen and Brown; and that from his theory more rational indications of cure can be deduced, than from thoſe either of Cullen or Brown; and if I ſhall prove, at the ſame time, that Dr. Darwin's doctrine more fully elucidates the ſucceſsful effects of various remedies, recommended by the induſtrious and ingenious Drs. Beddoes, Currie, &c. in the practice of medicine; I think I ſhall have eſtabliſhed my opinion, that the doctrine of the immortal Darwin is ſuperior to thoſe of Cullen and Brown.

To the opponents of the Zoonomia I need only ſay, that, to enter into the analyſis of any ſubject whatever, and to form a perfect judgment of it, it is neceſſary, to poſſeſs powers capable of perceiving all its relations, and to exerciſe them with an unbiaſſed deſire of elucidating truth. It is only by theſe means, that a doctrine laid down by any author can be either embraced or refuted in a philoſophical manner. Few, however, if any of the adverſaries of Darwin have entered into an unprejudiced inveſtigation of the Zoonomia; and ſome even ſeem to poſſeſs little power of mind, to enter into the examination of that work.

How

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* I have related the few ſubſequent caſes, both on account of my conſidering their ſucceſsful or unſucceſsful event as one good proof of the validity of Dr. Darwin's doctrines on the diſeaſes treated of, and at the ſame time of my wiſhing to acquaint the public, how far the treatment of fevers and acute rheumatiſm, adopted by the profeſſors of the Univerſity of Edinburgh, is conſiſtent with the theories, of which they affect never to ſpeak!

How can we judge otherwiſe of men, who, without giving any reaſon whatever, expreſs themſelves in the following ſcurrilous manner?

"It will readily be perceived, that we allude to the
" Zoonomia of Dr. Darwin, a work which, from the
" excellent character and reputed talents of its author,
" had raiſed conſiderable expectation in the public mind;
" but diſappointment, on the peruſal, was in proportion
" to the previous expectation. Inſtead of important and
" luminous corrections of the doctrine (of Brown) which
" might have been looked for, at this time of day, from a
" man of abilities, purſuing the ſame track of inveſtigation,
" *a want of argument and correct reaſoning* is found to
" pervade the whole. It is ſuch *a rudis indigeſtaque moles*,
" that, after wading through nearly ſix hundred pages, it
" ſeems impoſſible to comprehend the ſcientific principles,
" upon which the author intended to build his doctrine."
View of the Science of Life, p. 24, by Maclean.

After reading ſuch a paſſage, who can avoid exclaiming?

"Riſum teneatis amici?"

or

———" I curre per Alpes,
" Ut pueris placeas, et declamatio fias."

In the courſe of this treatiſe I ſhall have occaſion to conſider the correctneſs of thinking of this author, and his boaſted improvements on the doctrine of Dr. Brown; particularly his rejecting the exiſtence of what Brown calls ſthenic diſeaſes; an opinion, which, if inſtead of coming from an author of Dr. Maclean's limited celebrity, it had originated with one, whoſe medical reputation and ingenuity had been previouſly eſtabliſhed, might be productive of greater ravages among the human ſpecies, than all the projects of *ambition* or *revenge* recorded in ancient or modern hiſtory.

COMPARATIVE VIEW, &c.

CASES OF FEVER
UNDER THE CARE OF DR. GREGORY.

CASE I.

A. HAMILTON, age 32, was brought into the hoſpital December 7th, 1798, with the following ſymptoms: Great pains in the head, back, and all the joints of the body; ſtrength much exhauſted; countenance a little fluſhed; ſkin hot and dry; tongue white and parched; appetite loſt, much nauſea; belly bound; pulſe 140, nearly of natural ſtrength, and ſomewhat ſharp. This affection had commenced on the 3d inſtant. Took an antimonial draught. On the 8th, was waſhed with cold water and vinegar, from which all the ſymptoms were immediately reduced, chiefly the pulſe from 140 to 84. On the 9th, was ordered to have ℥vi. of wine with ℥iii. of water a day, which ſhe continued to have for ſeveral days. Till the 15th, nothing remarkable was obſerved, except ſome ſlight delirium in the night. On the 16th, tried to ſit up, and had a ſlight fit of rigor, followed by great heat and headach; pulſe 114, of good ſtrength; appetite loſt; much thirſt; was again waſhed with cold water and vinegar; took ſome bark, which occaſioned nauſea. On the 19th, the bark and wine were omitted, the waſhing was repeated, and a bliſter applied to the ſtomach. On the 20th, had no more ſickneſs, and all the other ſymptoms were reduced, which ever ſince continued to grow better; and on the 30th, ſhe was convaleſcent.

Caſe 2. C. Monro, aged 35, was brought into the hoſpital on the 19th of December, and then were marked the following ſymptoms: Strength much exhauſted; countenance ſomewhat livid; ſkin very hot, and covered with petechiæ; appetite loſt; urgent thirſt; ſome diarrhæa; conſtant drowſineſs; breathing quick and laborious; pulſe 124, of tolerable ſtrength, and ſomewhat ſharp. Was waſhed with cold water and vinegar, and ordered to have daily ℥viii. of wine with ℥iv. of water. Took occaſionally, on account of the diarrhœa, ſome of the tinctura opi, with infus. catechu, and at laſt ſome bark. On the 27th, was convaleſcent.

Caſe 3. N. McKay, aged 22, came into the hoſpital on the 11th of November, when the following ſymptoms appeared: Great pains in the head, breaſt, and limbs; great general debility; ſkin hot, and covered with petechiæ; appetite loſt; great thirſt; belly regular; ſlight cough; breathing rather quick; pulſe 98, and feeble. This affection had begun three weeks before. She was ordered to have daily ℥viii. of wine with ℥iv. of water, and to take at bed-time an anodyne draught; her face and head were once waſhed with cold water and vinegar; ſhe took occaſionally ſome calomel. On the 15th, the wine was increaſed to ℥xii. daily. On the 21ſt, ſhe was ordered to have only ℥vi. of wine daily. On the 22d, ſhe was ordered to omit the wine, and to continue the anodyne draught. On the 27th, was convaleſcent.

Caſe 4. G. Drummond, aged 13, was admitted into the hoſpital on the 16th of November, when the following ſymptoms were remarked: General debility; great headach; conſtant pains in his hips and thighs, and alſo on the calves of his legs; pain at the pit of the ſtomach on drawing a full inſpiration; frequent nauſea; bad appetite; much thirſt; tongue dry and foul; urine high-coloured; belly bound; bad ſleep; ſkin hot, and covered with petechiæ; pulſe 110, of tolerable ſtrength. Took an antimonial draught. On the 17th, took ſome calomel, was waſhed with cold water and vinegar. On the 18th, the waſhing was repeated, and the calomel. On the 20th, had a ſmall bliſter applied to the ſide, becauſe of a pain in it. On the 22d, was convaleſcent.

CASES

UNDER DR. HOPE'S CARE.

Caſe 1. N. Robinson, aged 16, was admitted into the hoſpital on the 19th of April 1799, with the following ſymptoms: Skin hot and dry; conſtant headach; alſo pains in the back, and under the right breaſt, occaſionally extending over the whole thorax, preventing a full inſpiration; conſtant nauſea and rigors, followed by increaſed heat and ſweating; appetite loſt; tongue foul, but moiſt; belly bound; pulſe 100. Took an emetic. On the 20th, took a purge, and was waſhed with cold water at 3 and 8 o'clock, P. M. On the 21ſt, was ordered to take daily ſome ſaline draughts, and to take in the evening another emetic, which was repeated on the next day. On the 26th, was convaleſcent.

Caſe 2. R. Feemiston, aged 32, was admitted into the hoſpital on the 27th of March, with general pains over his body, and particularly in the head; ſkin hot; ſome nauſea; bad appetite; ſome thirſt; tongue foul and dry; belly bound; bad ſleep; pulſe 106, and feeble. Was ordered to take every 4th hour ℥ii. of wine with ℥i. of water, and to have an injection when coſtive. On the 30th, the ſymptoms were much abated, was ordered to take every 3d hour ℥iſs. of wine and ℥ſs. of water. Took occaſionally ſome pills of rhubarb, and on the 10th of April, was convaleſcent.

CASE
UNDER DR. RUTHERFORD'S CARE.

Peg. Maitland, aged 17, was admitted into the hoſpital on the 28th of June, 1799, with the following ſymptoms: A ſenſe of ſoreneſs throughout the body; ſkin hot and dry; frequent nauſea; great thirſt; appetite loſt; tongue foul; great diarrhœa; ſevere headach; pulſe quick and weak. This affection had commenced a fortnight before. Took, on the 29th, a ſmall doſe of rhubarb, with prepared chalk, and alſo gr. x. of ſnake-root. On the 30th, was bliſtered on the back part of the neck, and took ſome prepared chalk and an anodyne draught. On the 1ſt of July, repeated the chalk and the draught, which ſhe continued to make uſe of till the 5th of July; but the ſymptoms were very little abated, and ſhe had always a great delirium in the night-time. On the 5th of July, took gr. vi. of camphor with gr. iv. of myrrh, by which the ſymptoms were much abated. On the 8th, the camphor was omitted, and ℥iv. of wine were ordered daily, which produced a gradual abatement of all the ſymptoms. On the 12th and 13th, ſhe was very reſtleſs. On the 13th, was ordered to take an opiate at bed-time, by which a tolerable ſleep was procured. On the 14th, the wine was increaſed to ℥viii. daily; but ſhe was extremely reſtleſs in the nights of the 15th, 16th, 17th, and 18th: the wine was continued, and beſides it, ſhe took an opiate on the 17th, which was repeated on the 18th, and was likewiſe fomented on theſe days. On the 19th, the reſtleſſneſs was quite gone, the other ſymptoms continued to abate, and upon the whole, ſhe was convaleſcent.

CASES
UNDER DR. DUNCAN'S CARE.

Caſe 1. J. **Milne**, aged 25, was admitted into the hoſpital on the 7th of December 1799, with the following ſymptoms: Severe headach and pain in the back; great anxiety and proſtration of ſtrength; tongue foul and parched; urgent thirſt; appetite not totally impaired; belly regular; pulſe 120: this affection had commenced on the 1ſt inſtant. Took an opiate on the 8th. On the 9th, was ordered to take every third hour ſome camphorated mixture. On the 14th, the camphorated mixture was omitted, and a mixture of Nitric Acid and peppermint water was ordered to be taken every third hour. On the 17th, was convaleſcent.

Caſe 2. A. **Ferguson**, aged 30, was admitted into the hoſpital on the 26th of December, with ſevere headach, great reſtleſſneſs and anxiety; occaſional cold ſhiverings, followed by heat; appetite loſt; great thirſt; tongue white, and a little dry; pulſe 104. This affection was

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of about ſix days ſtanding. Took ſome opiates, and ſome camphorated mixture, which was exchanged for a ſaline one on the 30th. On the 3d of January 1800, began to take ſome bark and ſtrong beer. On the 6th, was ordered to have ʒviii. of wine daily. The ſymptoms were gradually abated, and ſhe was convaleſcent towards the middle of January.

DR. CULLEN'S THEORY OF FEVER.

§ I. Dr. Cullen thinks, that the remote cauſes, whatever they may be, produce a debility affecting the *ſenſorium commune*: this debility occaſions a ſpaſm in the extreme veſſels; in conſequence of which, a reaction of the heart and arteries ariſes: this reaction reſtores the energy of the *ſenſorium*, and thereby produces the ſolution of the ſpaſm, and ſo of the diſeaſe (Firſt Lines, par. 46.) Hence Dr. Cullen ſuppoſes that the duration of any fever may be aſcribed, either to the obſtinacy of the morbid ſtate *(a)* or to the weakneſs of the ſalutary reaction (F. L. par. 60.)

§ II. Dr.

(a) That *morbid ſtate*, according to what Cullen ſays (Firſt L. par. 39—43.) ſeems to conſiſt only in the debility of the *ſenſorium commune*. For, he conſiders the ſpaſm of the extreme veſſels (par. 41.) as a part of the operation of the *vis medicatrix naturæ*. Now (par. 59.) he adds, that the operation of the *vis medicatrix naturæ* may be conſidered as the reaction of the ſyſtem; conſequently, the ſpaſm is a part of this reaction. But as that *morbid ſtate* or debility of the *ſenſorium* is removed by means of the reaction (F. L. par. 46. & 59.) and as the ſpaſm is a part of it, it is evident that we ought never to remove the ſpaſm; on the contrary, we muſt ſecond it, and chiefly when the obſtinacy of the *morbid ſtate* is great, which is known by a proportionably great degree of the ſame ſpaſm (F. L. par. 61.) that is, to cure a fever, we muſt increaſe the energy of thoſe phenomena, the preſence of which points out, in a *direct ratio*, the obſtinacy of the ſame fever, which is evidently abſurd.

§ II. **Dr. Cullen**'s doctrine does not account for the phenomena, which are obſerved in fevers. For if we ſuppoſe, that the debility of the whole of the functions, and particularly of the action of the extreme veſſels, lays the foundation of, or produces the ſpaſm of theſe veſſels, as Cullen thinks (F. L. par. 46.) it follows, that whenever that debility is abſent, the ſpaſm muſt likewiſe be abſent; in other words, whenever the action of the extreme veſſels, inſtead of debility, exhibits increaſed energy, the ſpaſm muſt be abſent, and ſo the fever. Now, from this, it would appear, that there is never what is called the hot ſtage of fever; for in this ſtage, inſtead of marks of debility, we ſee manifeſt ſigns of increaſed energy in the action of the extreme veſſels, as is evident from the increaſed heat over all the ſurface of the body; from the high coloured urine diſcharged during the hot fit, and from the greater ſecretion of the bile, which ſometimes occaſions a diarrhœa, &c.; which phenomena cannot be accounted for, if we ſuppoſe, that the extreme veſſels are ſtill affected with a ſpaſm dependent on an atony, which ſubſiſts in thoſe veſſels during the whole courſe of the fever (F. L. par. 43.); which ſpaſm, according to Dr. Cullen, (F. L. par. 62.) is ſometimes increaſed by a diatheſis phlogiſtica *(b)*.

§ III. The ſuppoſed exiſtence of a ſpaſm in the extreme veſſels cannot lead us to any reaſonable explanation of the production of the hot ſtage of fevers, either with arterial ſtrength, or with arterial debility. For, 1ſt, at the termination of the cold ſtage of a fever, the action of the heart and large arteries ought to be reſtored prior to the

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(b) How is it poſſible, that the diatheſis phlogiſtica, which is manifeſt by the increaſed energy of all the functions, and particularly of the action of the extreme veſſels, can concur to form in a greater degree the ſpaſm, which is dependent on the atony of thoſe veſſels?

action of the other functions, which is not the caſe; ſince Dr. Darwin (Zoonomia, vol. ii. p. 541.) ſays, "the renovated activity of the capillaries commences, as ſoon or "ſooner than that of the heart and arteries, after the cold "fit of irritative fever." In proof of this, I adduce the following experiment, which I made on a patient labouring under an intermittent. Towards the end of the cold fit, I felt frequently the pulſe of the patient, and at the ſame time, the ſurface of the body: The heat of the ſkin in various parts of the body, as the face, breaſt, &c. was manifeſtly increaſed before I could mark any difference in the ſtate of the pulſe. See Zoonomia, vol. ii. p. 557. Again, if the ſpaſm of the extreme veſſels be the cauſe of the hot fit, by increaſing the maſs of the blood in the larger veſſels, and exciting by this increaſed ſtimulus the torpid arteries, phenomena different from thoſe, which are obſervable, ought to appear in fevers, viz. the heart and arteries ought, immediately after the formation of the ſpaſm in the extreme veſſels, to be excited into increaſed actions. For how can it be conceived, that the ſtimulus of the blood, ſo much increaſed in the larger veſſels, immediately after the formation of the ſpaſm in the extreme ones, does not excite thoſe veſſels into increaſed actions (which is known by the ſtate of the pulſe) but after the expiration of half an hour, and ſometimes even much more?

§ IV. 2d. In thoſe fevers, which are attended with arterial debility after the cold ſtage is over, the action of the extreme veſſels is increaſed, as is evinced by the heat of the ſkin, while that of the heart and large arteries continues in a weak ſtate, as is manifeſt by the weak and frequent pulſe. Now, if the increaſed action of the extreme veſſels be an effect of the increaſed energy of the heart and arteries (F. L. par. 46.) why does the effect exiſt when the cauſe has not taken place?

§ V. From the proximate cauſe of fever laid down by Dr. Cullen, no reaſonable indication of cure in that diſeaſe can be deduced. For if Dr. Cullen ſuppoſes that an atony of the extreme veſſels throughout the courſe of the diſeaſe (fever) ſupports the ſpaſm (F. L. par. 43.), and as the ſpaſm is the cauſe of the reaction of the heart and arteries, which reaction, reſtoring the energy of the brain, reſtores alſo the action of, or removes that atony of the extreme veſſels (F. L. par. 46.), the indications which follow from this, are—1ſt, to remove that atony of the extreme veſſels;—2d, to increaſe the reaction of the heart and arteries, when it is not ſufficient to overcome that atony;—3d, to moderate or ſubdue that reaction, when it ſeems to be greater than is neceſſary to overcome that atony. Thus, according to the firſt indication, we ought always, in the cure of fevers, to apply ſtimuli to the extreme veſſels, ex. gr. heat to the ſurface of the body; and that not only in the cold ſtage, but even in the hot fit; ſince this is likewiſe ſupported by ſpaſm of the extreme veſſels, which is dependent on an atony of the ſame veſſels (F. L. par. 43.) But how can it be reconciled with the following paſſage of Dr. Cullen's Firſt Lines (par. 130.) "No impreſſion is to be more carefully "guarded againſt than that of external heat?" and likewiſe, how does it agree with the remarkably good effects of the ablution with cold water, in the foregoing caſes of A. Hamilton, C. Munro, &c. under Dr. Gregory's care, and of N. Robinſon under Dr. Hope's care; and laſtly, with the ſalutary effects of the affuſion of cold water in fevers, as Dr. Currie (c) atteſts?

§ VI. Ac-

(c) Dr. Currie thinks, that the affuſion of cold water in fevers acts as a powerful ſtimulus, which diſſolves the ſpaſm of the extreme veſſels of the ſurface, &c. But I conſider, with Dr. Darwin, that affuſion, as a ſubduction of ſtimulus, and its good effects, as aſcribable

§ VI. According to the 2d indication, we muſt always increaſe the reaction of the heart and arteries, whenever this reaction ſeems inſufficient to overcome the atony of the extreme veſſels, and ſo the ſpaſm. Hence when the ſpaſm is great, which is known by the preſence of a diatheſis phlogiſtica (F. L. par. 62.) there is a great degree of atony to be overcome. Therefore we muſt ſecond or increaſe the reaction of the heart and arteries. But how does this agree with the treatment, which Cullen points out for the cure of what he terms diatheſis phlogiſtica (F. L. chap. 6.) and with the treatment adopted by every practitioner in ſimilar caſes?

§ VII. According to the 3d indication, when the ſpaſm is in a ſmall degree, which is known by the abſence of the diatheſis phlogiſtica, and rather by the appearance of ſymptoms of debility (F. L. par. 63), we ought never to increaſe the reaction of the heart and arteries, ſince the ſpaſm, which is to be overcome by ſuch means, is very ſmall; viz. in fevers with ſymptoms of arterial debility, we ought not to increaſe the energy of the heart and arterial ſyſtem. But how can this be reconciled with the plan of cure laid down by Dr. Cullen in fevers, where ſymptoms of debility are preſent (F. L. par. 201, 220)? with the good effects of wine, ordered by Dr. Gregory in the caſes of C. Monro, N. M'Kay, &c.? and by Dr. Hope, in the caſe of R. Feemiſton? with the good effects of camphor ordered by Dr. Rutherford, in the caſe of Peg. Maitland? likewiſe, with the ſucceſs which was obtained by the preſcription of wine, opium, and bark, &c. in the caſes of J. Milne and A. Ferguſon, under the care of Dr. Duncan? and, in fine, with the almoſt always viſible good effects of wine, opium,

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aſcribable to its diminiſhing or ſubduing the morbid increaſed actions of the extreme veſſels of the ſurface, &c. (See note (*p.*) §. 27.)

opium, bark, &c. in the cure of fevers with arterial debility, when given in proper doſes, and at proper intervals, *(d)* as Dr. Darwin recommends?

DR. BROWN'S THEORY OF FEVER.

§ VIII. Dr. Brown ſuppoſes the proximate cauſe of fever to conſiſt in debility (Elem. of M. par. 679.) which may be either direct or indirect, according to the nature of the noxious powers which were previouſly applied to the ſyſtem. (Elem. of M. par. 681—683.) Hence he makes two diviſions of fevers;—1ſt, Thoſe which depend on direct debility: in this he ranks ſome intermittent fevers, the typhus mittor and gravior, the

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(d) In the foregoing caſes of fever, the intervals for the taking wine were not regulated, except in the caſe of R. Feemiſton, under Dr. Hope's care, in which, therefore, the good effects of wine were more ſtriking. Hence we may conclude that the good effects of this remedy would have been more remarkable in the other caſes. The ſame obſervation may be applied to camphor, bark, &c. but chiefly to opium, the effects of which were not remarkable in any of the above caſes, ſince it was never ordered by any of the profeſſors with the view of ſtimulating gradually the torpid ſyſtem, but with the intention of procuring ſleep, or removing morbid reſtleſſneſs, which effects they ſay, (as I heard while attending the clinical lectures) the opium did produce, in conſequence of its ſedative power! But I would deſire to know, whether opium remove the watchfulneſs and reſtleſſneſs, which ariſe from morbid *increaſed energy* of the ſyſtem, as certainly as it does thoſe which are occaſioned by *morbid decreaſed* energy of the ſyſtem. The ſolution of this queſtion may be found in the caſes of M. Stewart, under Dr. Gregory's care; of I. Brown, under Dr. Rutherford's care; and of A. Buchannan, under Dr. Duncan's care, labouring under acute rheumatiſm, to whom opium was ordered in the beginning of the diſeaſe, with the view of procuring ſleep, and of allaying pains which were evidently produced by the morbid increaſed energy of the ſyſtem! the conſequence was, that the pains were not abated, on the contrary, they were aggravated; ſleep was not procured, and the diſeaſe, which could have been cured in a fortnight, was protracted in each of the patients mentioned to upwards of two months! See note *(b)* §. 47.

the plague, &c. (Elem. of M. par. 685, 6.)—2d, Thoſe which depend on indirect debility: under which diviſion he ranks ſome intermittents, and ſome continued fevers, occaſioned by drunkenneſs, the confluent ſmall-pox, &c. (Elem. of M. par. 687.) Hence he forms two indications in the cure of fevers, juſt according to thoſe diviſions for removing direct and indirect debility (Elem. of M. par. 103—110) viz. In fevers dependent on direct debility, he recommends diffuſible ſtimuli in ſmall doſes, and often repeated (par. 686.); in thoſe dependent on indirect debility, he orders the largeſt doſes of ſtimuli, (par. 687.)

§ IX. 1ſt. Dr. Brown's doctrine does not account for the hot fit of ſome intermittent fevers, in which, inſtead of debility, we obſerve all the ſymptoms of increaſed energy of the ſyſtem. Dr. Brown, more ingenious than Cullen, in making all the parts of his ſyſtem coincide, foreſaw, that if he admitted *an increaſed energy of the ſyſtem, in the hot ſtage of intermittent fevers*, he would be forced to own, that the eſſence of an intermittent fever does not conſiſt in debility only. Therefore he rejected a truth, evident from daily experience, becauſe it was contrary to his principles. Hence ſpeaking of intermittent fevers, he ſays, "In the cold fit, exhibiting manifeſt debility; "in the hot counterfeiting vigour" (Elem. of M. par. 656.); and in another part, "the debility during the "cold ſtage is the greateſt, that of the hot leſs, and that "of the ſweating ſtage, is the leaſt of all." How often have men mutilated nature and truth, for the ſake of their ſyſtems! *Ce ſont nos méthodes qui nous égarent.* Etudes de la Nature, Etud. 9.

But during the hot ſtage of an intermittent fever, in which the pulſe is full and ſtrong, the urine is increaſed in quantity, and high coloured; the ſaliva is alſo increaſed in quantity and viſcidity, and in fine all the ſecretions are increaſed, as is evinced by the increaſed heat over the body. Who then can deny, that there is a preternaturally increaſed energy of the ſyſtem? how could the various ſecretory organs, if they were ſtill affected with debility, perform their functions, not only with an energy equal to that with which they act in health, but even ſuperior? How could the pulſe feel full and ſtrong, if the arteries were affected with debility?

§ X. 2d. Even ſome of the phenomena, which take place in the hot ſtage of ſome continued fevers with arterial debility, ex. gr. the increaſed action of the capillaries, which is evinced by the increaſed heat of the ſkin, cannot be accounted for by Dr. Brown's doctrine. For Dr. Brown ſuppoſes, that debility, either direct or indirect, is the proximate cauſe of fever (Elem. of M. par. 679,) and chiefly (note (*p*) par. 46) where he ſays, " by fevers, here " are meant thoſe diſeaſes, ſo named, which depend on evi- " dent debility, &c." conſequently, if there be a general debility all over the ſyſtem, the capillaries muſt be affected likewiſe (Elem. of M. note (*l*) par. 232); hence there is no increaſed action of ſuch veſſels: but how is the phenomenon of the increaſed heat of the body to be explained, if we ſuppoſe the capillary veſſels affected with debility? this phenomenon is explained by Dr. Brown in the following manner: " the perſpirable fluid, being detained " under the cuticle, the heat, which in a full perſpiration " uſually goes off into the air, and remains nearly of the " ſame degree, is accumulated, and increaſes." (Elem. of M. par. 184). But according to Dr. Alexander's experiments, as Dr. Darwin relates (Zoonomia, vol. ii. p. 19 and 697), the perſpiration is not ſuppreſſed when the heat of the body is above the natural ſtandard (which is commonly the caſe in the hot fit of ſome fevers with arterial debility); nay, the perſpiration then is greater (*e*), conſequently the increaſed heat in thoſe fevers cannot be aſcribed to the ſuppreſſion of the perſpirable fluid, and thereby to the accumulation of the animal heat under the cuticle (*f*), therefore it muſt be aſcribed to the increaſed actions of the capillaries, which is confirmed by the reduction of the ſame increaſed heat after the ablution with or affuſion of cold water (ſee note (*p*) § 27). Hence it appears, that Dr. Brown's doctrine does not account either for the increaſed heat, or increaſed action of the capillaries.

§ XI. The indication, which Dr. Brown has juſtly drawn from his doctrine, 1ſt, enforces always remedies, which are ſometimes noxious; and rejects always a remedy which is at times uſeful in the cure of intermittent fevers. For Dr. Brown, as mentioned before, (§ IX.) thinks that a debility prevails throughout all the courſe of an intermittent. Hence he uniformly rejects the uſe of bleeding, (Elem. of M. par. 661) and recommends to give ſtimuli, not only during the intermiſſions, but alſo throughout the paroxyſms in every ſtage (Elem. of M. par. 668.)

§ XII. But

(*e*) The perſpirable matter does not appear in ſuch caſes upon the ſkin; 1ſt, becauſe the abſorption of it is then greater; 2d, becauſe the evaporation of the ſame matter is likewiſe greater, in conſequence of the increaſed heat of the body. Zoonomia, part i. ſect. 32, 9, 2.

(*f*) Though Dr. Currie, when he enters into the inveſtigation of the various theories of fever, ſays, "the ſyſtem of Hoffmann produced that of Cullen, which may perhaps be conſidered as the "prevailing doctrine at preſent, when, however, theory of every kind "has loſt much of its weight on mature underſtandings." (M. Rep. p. 15.) However, afterwards he ſeems to own that it is neceſſary to theorize, ſince (p. 174, M. Rep.) he ſays "for the peculiar debi-"lity, induced by the remote cauſes, occaſions, or is attended by a "ſpaſm, or morbid ſtricture of the capillaries of the ſurface, &c." How otherwiſe, if to theorize be to think? (Darwin.)

§ XII. But according to Pringle (*g*), Dr. Ruſh (*h*), and Dr. Gregory, bleeding is ſometimes uſeful in the cure of intermittents, which muſt always be the caſe when it is uſed in the hot fit, in which the actions of the ſyſtem are greater than is neceſſary to reduce the excitability to its proper limits, which may be known by the ſtate of the pulſe, heat of the body, &c.

§ XIII. Amongſt the ſtimuli recommended by Brown, opium *indeed* has been uſed by ſome practitioners during the hot fit of intermittents (*i*), and as it is ſaid with good effects, which may ſometimes be obtained when the actions of the ſyſtem, during the hot fit, are leſs than they ought to be to reduce the excitability to its juſt or natural degree; otherwiſe it muſt be noxious. Hence Burſerius blames its uſe in ſuch caſes.

§ XIV. 2d. The indication deduced from Dr. Brown's doctrine rejects the uſe of one of the beſt remedies, which we at preſent know in the cure of ſome continued fevers with arterial debility, and even of intermittents, viz. the ablution with or affuſion of cold water over the ſurface of the body. For as Dr. Brown ſuppoſes, that the whole yſtem is affected with debility in fevers; and as he conſiders any cold application as a ſedative or ſubduction of the ſtimulus heat, therefore it muſt be avoided.

§ XV. Hence he ſays, "it is a miſtake prevailing "among ſyſtematic writers and lecturers, that cold is of "ſervice

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(*g*) See Diſeaſes of the Army.

(*h*) See Medical Obſerv. and Inqu. the 1ſt vol.

(*i*) Opium is recommended by Dr. Cullen and Dr. Gregory in the hot fit of intermittents, as a ſedative, but the ſedative power of this remedy was queſtioned, note (*d*) § 7. The good effects of it in the hot fit of intermittents are ſtill to be aſcribed to its ſtimulating power, as is ſhewn above.

"ſervice in the fevers of the torrid zone." (Elem. of M. note (*h*) par. 37.) But who can deny the good effects of the ablution with cold water in the foregoing caſes, under the care of Dr. Gregory? who beyond doubt, during his clinical attendance in the hoſpital, by this means, and the preſcription of wine, reſcued two patients from the brink of deſtruction. Who can ſhut his eyes to the light of evidence to deny the atteſted good effects of the affuſion of cold water in continued fevers with arterial debility, and likewiſe in intermittents, during the hot ſtage, when the heat is above the natural ſtandard, as Dr. Currie relates? See Dr. Ferriar's Med. Hiſt. and Howard on Priſons, and many others, by whom the utility of the application of cold water to the ſurface of the body in ſuch caſes is confirmed.

DR. DARWIN'S DOCTRINE OF FEVER.

> "But near it ſate ecſtatic wonder,
> "Liſtening the deep applauding thunder. COLLINS.

§ XVI. BEFORE we enter into the conſideration of this doctrine, we ſhall lay down ſome principles deduced from the Zoonomia.

1ſt. There is in every part of the animal ſyſtem a living principle, which is termed ſenſorial power, and which is conſidered as the immediate cauſe of all its motions (Zoon. part i. ſect. 4.) This is ſuppoſed to be ſecreted in the brain and ſpinal marrow (Zoon. part i. ſect. 12, 2, 1.)

2d. This living principle is capable of being acted upon in four different ways, viz. it poſſeſſes four different faculties or modes of action, which in their inactive ſtate are called irritability, ſenſibility, voluntarity, and aſſociability, and in their active ſtate, or while they are exerted, they are termed irritation, ſenſation, volition, and aſſociation. (Zoon. vol. i. ſect. 5.)

3d. The faculty of that living principle, which is termed irritability, is exerted in conſequence of the ſtimulus of external bodies acting on any part of the ſyſtem where ſenſorial power reſides, and it then may produce fibrous motions. That of ſenſibility is exerted in conſequence of the ſtimulus of pleaſure or pain, occaſioned by the fibrous motions produced by the ſenſorial power of irritation at firſt. That of voluntarity is exerted in conſequence of the ſtimulus of deſire or averſion, occaſioned by the fibrous motions produced by the ſenſorial power of ſenſation at firſt. That of aſſociability is at firſt exerted in conſequence of the ſtimulus of any fibrous motions, previouſly occaſioned either by irritation, ſenſation, or volition. (Zoon. vol. i. ſect. 4. and 12.)

4th. During the application of any of theſe ſtimuli (Prin. 3d), the living principle, or ſenſorial power, becomes exhauſted (*k*); on the contrary, during the ſubduction of any of theſe ſtimuli the ſenſorial power becomes accumulated.

5th. There are various circles of aſſociate motions in the animal ſyſtem, which may take their names from the nature of their introductory link: that is, thoſe circles,

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(*k*) The ſtimuli in this caſe muſt be greater than the natural, that is, ſuch that the quantity of ſenſorial power derived from the brain and ſpinal marrow is not ſufficient, to ſupply the waſte of it in the parts acted upon by the ſtimuli. In the other caſe the contrary takes place, &c.

the introductory link of which conſiſts of an irritative motion, may be termed circles of irritative aſſociate motions: thoſe, the introductory link of which conſiſts of a ſenſitive motion, circles of ſenſitive aſſociate motions; and laſtly, thoſe, the introductory link of which conſiſts of a voluntary motion, circles of voluntary aſſociate motions (Zoon. vol. ii. Claſs IV. 1, 1, B.)

6th. The links of each of theſe circles act on one another by means of the ſenſorial power, which in its inactive ſtate is called ſenſorial power of aſſociability, and in its active ſtate ſenſorial power of aſſociation. (Zoon. vol. i. ſect. 5.)

7th. Theſe circles of aſſociate motions may be affected by other ſenſorial motions, occaſioned by the ſenſorial powers of irritability, ſenſibility, and voluntarity (Zoon. vol. ii. Claſs IV. 1, 1, D.)

8th. Each of theſe great circles of aſſociate motions may be conſidered as compounded of ſmaller circles, that is, the great circle of irritative aſſociate motions may be looked on as a collection of ſmaller circles of the ſame kind. (Zoon. Supl. 1ſt. 6.)

9th. The introductory link of any circle of aſſociate motions, may have its action increaſed, or decreaſed, or in its natural degree. The firſt may take place either in conſequence of exceſs of ſenſorial power, the ſtimuli being in their accuſtomed degree; or in conſequence of exceſs of ſtimuli, the ſenſorial power being in its natural degree; or in conſequence of exceſs of both. The ſecond may ariſe either from want of ſenſorial power, the ſtimulus being in its uſual degree; or from ſubduction of ſtimuli, the ſenſorial power being in its natural quantity; or from want of ſenſorial power, and ſubduction of ſtimuli. The third takes place, when both the ſenſorial power and the ſtimuli are in a proper degree.

10th. Sometimes the morbid increaſed, as well as the morbid decreaſed, actions of the introductory link of a circle of aſſociate motions are followed by ſimilar actions of the other links; at other times by contrary actions: in the firſt caſe we have direct, in the ſecond indirect ſympathy. (Zoon. vol. i. ſect. 35, 1; and vol. ii. Claſs IV. 1, 1, F.)

11th. The morbid decreaſed actions, which ariſe from ſubduction of ſtimuli, are ſooner overcome, than thoſe which are occcaſioned by want of ſenſorial power (*l*). (Zoon. vol. ii. Sup. 1, 12, 10.)

12th. The morbid increaſed actions, which ariſe from exceſs of ſenſorial power, are more violent than thoſe,

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(*l*) When a ſudden application of ſtimuli, in a great degree, takes place in any part of the ſyſtem, an exhauſtion of ſenſorial power enſues in a direct ratio of the ſtimuli applied, and of the ſenſorial power, which then reſides in the part acted upon.

This exhauſtion may be conſidered as an effect of the increaſed actions of that part, occaſioned by the great degree of the ſtimuli, and of ſenſorial power. But there is another effect, which, I think, may be aſcribed to the ſame cauſe, or increaſed actions of the part acted upon. This conſiſts in a diſorder of the organization of the part, in conſequence of which it loſes, more or leſs, its capability of deriving ſenſorial power from the brain and ſpinal marrow, which is reſtored only by ſlow degrees; hence the longer duration of morbid affections from exhauſtion of ſenſorial power. To reſtore this capability of deriving ſenſorial power to its proper degree, we muſt apply ſtimuli proportioned to the derivation which yet exiſts; which being ſmall, the ſtimuli likewiſe muſt be in ſmall doſes, otherwiſe we produce further exhauſtion of ſenſorial power. Hence it appears, that indirect debility ought never to be overcome by large doſes of ſtimuli, which laſt are recommended by Dr. Brown in ſuch caſes (Elem. of M. §. 687); but Dr. Darwin diſapproves of their application in the typhus gravior, which is a diſeaſe of exhauſtion according to him. (Zoon. vol. ii. Claſs II. 1, 3, 1.)

which are produced by exceſs of ſtimuli. Hence inflammatory diſeaſes are commonly preceded by ſubduction of ſtimuli, and conſequent accumulation of ſenſorial power, &c. But when exceſs of ſenſorial power is acted upon by exceſs of ſtimuli, the exertion which follows is far ſuperior. Hence mortification of frozen limbs, when brought near the fire. (Zoon. vol. ii. Claſs III. 2. 1, 17.)

13th. Thoſe parts, which are ſubjected, during health, to perpetual action, as the heart and arteries, accumulate ſenſorial power faſter, when their motions are impeded, than thoſe which are ſubjected to intermitted action. (Zoon. vol. ii. Supl. 1, 3, 1.)

14th. When ſtimuli, which are uſually applied to a certain part of the ſyſtem, are ſubducted from it, an accumulation of ſenſorial power takes place there, proportioned to the ſubduction of thoſe ſtimuli, and to the ſtate (*m*) of that part.

15th. The

(*m*) This ſtate depends either on a peculiar idioſyncraſy of the ſyſtem, by which the part is able to derive much more ſenſorial power from the brain and ſpinal marrow than, *cæteris paribus*, a ſimilar one could do in other perſons; or on the agents, which had previouſly acted upon it; which agents either could form that idioſyncraſy, if it did not previouſly exiſt, or increaſe it, if already preſent. From this, I think, may be explained the bad effects of the application of cold to various parts of the ſyſtem, which had previouſly been much overheated, thus: By the previous ſtimulus of heat applied to the ſyſtem, a certain exertion of the various parts of it enſued. Now, when this exertion is within certain limits, it may be conſidered as a cauſe, by which much more ſenſorial power is derived from the brain and ſpinal marrow to the parts exerted, than they are accuſtomed to derive in their natural ſtate: therefore, if the ſtimulus of heat, which expends that ſenſorial power, be ſuddenly ſubducted, while the derivation of ſenſorial power to theſe parts is ſo great, we may eaſily conceive, how they may then fall into a torpor; which conſequently is owing to a ſudden accumulation of ſenſorial power, and not to its exhauſtion, or, as Mr. Maclean ſays, to the exhauſtion of the excitability (Science of Life, p. 42 and 143). For how can it

15th. The exertion of any part of the ſyſtem may be either proper *(n)*, or greater, or ſmaller than it ought to be; and ſo either health, or inflammation, and the various degrees of exhauſtion of ſenſorial power, or torpor from accumulation of ſenſorial power, will enſue.

16th. Fever conſiſts of one or more diſordered trains or tribes of aſſociated motions (Zoon. vol. ii. Claſs II. 1, 2.). Hence fever will be more or leſs complicated, according to the number of the tribes diſordered.

§. XVII. After theſe principles, Dr. DARWIN's doctrine of fever may be conſidered as follows. When

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it be conceived, that the ſudden ſubduction of the ſtimulus heat will produce *indirect*, and not *direct debility?* From what principles can we conclude, that a ſudden ſubduction of a certain cauſe will produce the ſame effects, as ariſe from the preſence of that cauſe? And does the author, who thus expreſſes himſelf, talk of *want of argument and correct reaſoning* in the Zoonomia?

(n) When the ſtimuli, which we apply to any part of the ſyſtem, are proportioned to the ſenſorial power then reſiding there, the exertion, which follows, does not occaſion either exhauſtion or accumulation of ſenſorial power: becauſe, in ſuch caſes, the ſenſorial power, expended in that exertion, is proportioned to the quantity of it derived from the brain and ſpinal marrow, in conſequence of the ſame exertion. But theſe ſtimuli, being gradually increaſed, may likewiſe occaſion a gradual increaſed exertion, which may at the ſame time increaſe the derivation of ſenſorial power, as it then expends more of this living principle. Hence, by gradually increaſing the doſes of wine, opium, &c. any perſon may at laſt take a very large doſe, without any inconvenience. On the contrary, theſe ſtimuli, being gradually decreaſed, produce likewiſe a gradually decreaſed exertion; which, expending by degrees leſs and leſs ſenſorial power, occaſions at the ſame time a gradual diminiſhed derivation of this living principle. Hence, by gradually decreaſing the doſes of ſpirituous liquors, people accuſtomed to the baneful practice of drinking,

> " O'er the dread feaſt malignant Chemia ſcowls,
> " And mingles poiſon in the nectar'd bowls;
> (Darwin's Bot. Gard.)

may at laſt give it up entirely without any harm, which, if done ſuddenly, may produce various diſorders, &c. (See note *(m)* Prin. 14.)

the torpor of any part of the ſyſtem, owing to deficient irritation, occaſioned either by the ſubduction of the natural ſtimuli, and conſequent accumulation of ſenſorial power, or by the application of powerful ſtimuli, and conſequent exhauſtion of the ſame living principle *(o)* (Prin. 4th, 7th, and 14th.) is ſuch as to occaſion

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(o) Hence it appears, that the remote cauſes of fever may be reduced, either to deficient, or to exceſſive ſtimuli. The contagious matter is conſidered by Dr. Darwin as of the latter kind, that is, as a powerful ſtimulus, which, being ſwallowed with the ſaliva into the ſtomach, occaſions an exhauſtion of ſenſorial power there, (ſee note *(l)* Prin. 11th) and more or leſs increaſed action of the capillaries (§. xx.). But when it acts on other parts, as, for inſtance, on the tonſils and about the throat, or on the ſkin, as in the inoculated ſmall-pox, it occaſions an exhauſtion of ſenſorial power there, and an accumulation of the ſame living principle in the ſtomach, in conſequence of defect of excitement of the ſenſorial power of aſſociation (Prin. 6th and 10th.) Hence the fever, which then follows, is with ſtrong pulſe (§ 19 and 23.) Therefore the various effects of contagious matter are to be aſcribed to the different nature of the parts on which it acts, and not to its peculiarity of being ſometimes a powerful ſtimulus, and at other times a ſubduction of ſtimuli, as Dr. Brown ſays (Elem. of M. §. 76, 146, and 219.) The idea of certain diſeaſes being occaſioned by the influence of a contagious matter, has been admitted by every obſerving practitioner:

> " Thus when the plague, upborne on Belgian air,
> " Look'd through the miſt, and ſhook his clotted hair;
> " O'er ſhrinking nations ſteer'd malignant clouds,
> " And rain'd deſtruction on the gaſping crouds."
> Darwin's Botan. Gard. part 1. cant. iv. l. 86.

However, Dr. Maximilian Stoll, of Vienna, has aſſerted, that the plague is not contagious. See Rat. Med. 1778.

But Dr. Stoll, in hazarding this opinion, was actuated more by motives of private intereſt, than by a love of truth.

Lately, another writer has maintained, that not only the plague, but alſo the typhus gravior, or malignant fever, as it is called, dyſentery, &c. are not occaſioned in any way by contagious matter, which he means to prove in the following manner:

1ſt. Becauſe conſequences, which would neceſſarily reſult from the exiſtence of contagion in epidemic diſeaſes, do not actually take place (Science of Life, by Maclean, p. 192.) Theſe conſequences, according to this author, are 1ſt, That while ſuch diſeaſes rage, the number of ſick people would be greater, ſince ſmall-pox and meaſles, which are contagious diſeaſes, produce this effect. But this only proves, that ſmall-pox and meaſles are diſeaſes more contagious than typhus gravior, plague, &c. which, however, is not always the caſe.

occaſion decreaſed actions of that part, what happens? The next link of the tribe of aſſociate motions falls alſo into

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caſe. I recollect to have ſeen once, in a country town in Portugal, the ſmall-pox attacking very few perſons, when many, who had never had this diſeaſe, were often within the infectious diſtance; and two years after an epidemic fever raged in the ſame place, of which a much more conſiderable number fell ſick, when within the infectious diſtance.

2d. If ſuch diſeaſes were contagious, ſays Mr. Maclean, they ought, like the meaſles and ſmall-pox, which are general diſeaſes, and unqueſtionably contagious, to occur in the ſame perſon but once during life: but this is not the caſe, either in the plague, as Dr. Alexander Ruſſel ſays he had ſeen the ſame perſon affected with it ſeveral times, or in other diſeaſes called contagious, as the yellow fever, ſince Dr. Ruſh aſſerts that reinfection was very common. But might not ſuch diſeaſes be of a different nature, though the external appearance indicated ſimilarity in thoſe caſes? Dr. Darwin (Zoonomia, vol. i. ſect. 33, 2, 9,) ſays, “from the accounts of “the plague, violent catarrh, and putrid dyſentery, it ſeems uncertain whether theſe diſeaſes are experienced more than once.” The anſwer given by Dr. Giovanelli to the queſtion propoſed by the ever memorable Mr. Howard,—“are convaleſcents ſubjected to repeated “attacks from the ſame infection of the plague?” ſeems to countenance this. (See Howard on Lazarettoes, p. 39.)

2d. Becauſe the exiſtence of contagion in the plague, &c. has been taken for granted, without any proof, and even contrary to the evidence of numerous and convincing facts. (Science of Life, p. 196.) But there is ſufficient proof of the exiſtence of contagion in the plague, when it is aſſerted, that it commonly attacks every perſon within the infectious diſtance, while the contrary takes place when out of that diſtance. (See Howard on Lazarettoes, p. 34.) It is likewiſe ſaid by Mr. Maclean, that the plague is not contagious, becauſe ſome people are not attacked by it within the infectious diſtance. But why does not ſmall-pox, which is a contagious diſeaſe, attack all thoſe, who never had it, and who come within the infectious diſtance? As to the other part, I do not ſee, that Mr. Maclean has pointed out any convincing fact, contrary to the exiſtence of contagion in the plague, &c. except he means to eſtabliſh, that the various degrees of the contagion of the plague, &c. muſt always produce the ſame effects, viz. muſt always produce a diſeaſe with the ſame ſymptoms, in perſons either of the ſame, or of an apparently ſimilar conſtitution; ſince, p. 200, he ſays, that wine will intoxicate in all countries, without taking into conſideration the ſtrength and doſe of wine, the peculiar idioſyncracy of the perſon who drinks it, and the cuſtom of drinking wine in ſmall or great doſes.

3d. Becauſe ſuch diſeaſes, as are uſually reputed contagious, depend on certain viciſſitudes of the atmoſphere, together with other powers, producing indirect debility (Science of Life, p. 206.)

into a torpor, from defect of excitement of the ſenſorial power of aſſociation, and ſo the ſubſequent one, till a general torpor affects the ſyſtem. This conſtitutes the cold paroxyſm of fever. This general torpor remains, till the accumulation of the ſenſorial power of aſſociation has been formed, which may overbalance that defect of excitement of aſſociation, and then the torpor ceaſes, and the hot fit of fever is produced.

§ XVIII. When the torpor of the part firſt affected is occaſioned by the ſubduction of the natural ſtimuli, this part is likewiſe thrown into increaſed actions during the hot fit. But if it ariſe from exhauſtion of ſenſorial power, this part remains in a torpid ſtate during the hot fit (Prin. 11.).

§ XIX. The torpor induced by the ſubduction of the natural ſtimuli, as it is overcome at the end of the

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On explaining this aſſertion, Mr. Maclean only proves, that theſe viciſſitudes of the atmoſphere are a concurrent cauſe of the diſeaſes treated of: but he by no means ſhows, that the production of ſuch diſeaſes is independent of contagion. For what difference could take place in the atmoſphere, near a patient attacked with the plague, or clothes infected with its contagion, that is, within the infectious diſtance, and at a diſtance of 16 or 17 paces from the patient, or clothes infected, in a well ventilated place, to render almoſt every perſon ſubject to the diſeaſe in the firſt caſe, and to exempt almoſt all from it in the laſt, (as atteſted by the various phyſicians of the Lazarettoes at Marſeilles, Leghorn, Malta, Venice, Trieſte, &c. See Howard on Lazarettoes, p. 34.) but that occaſioned by the contagion, ariſing either from the patient labouring under the plague, or from the infected clothes, and communicated to the ſurrounding atmoſphere? Is it reaſonable to ſuppoſe, that the place where a patient attacked with the plague, or clothes infected with its contagion, happen to be, has an atmoſphere with *certain viciſſitudes*, capable of inducing a diſeaſe more or leſs ſimilar to that under which that patient labours, &c. independent, in every particular, either of the patient, or infected clothes, while 16 or 17 paces diſtant the atmoſphere has no ſuch viciſſitudes? Yet " the ſimple " viciſſitudes or ſtates of the atmoſphere," (ſays Mr. Maclean, p. 21.) " will explain the phenomena of peſtilential diſeaſes, with- " out the aſſiſtance of contagion!"

cold fit (§ XVIII.), always gives riſe to fevers with ſtrong pulſe; ſince in this caſe all the parts of the ſyſtem have their actions increaſed during the hot fit (Prin. 12.).

§ XX. The torpor induced by the exhauſtion of ſenſorial power produces various effects, according to the part, in which it takes place. When it takes place in the ſtomach, it is always a cauſe of continued fever with weak pulſe (Zoonomia, vol. ii. Supl. I. 16. 9.) In this caſe, in conſequence of the torpid ſtate of the ſtomach, the arterial ſyſtem falls likewiſe into a torpor, from defect of the excitement of the ſenſorial power of aſſociation (Princ. 6 and 10.); therefore an accumulation of this ſenſorial power of aſſociation takes place in the arterial ſyſtem: but this accumulation is ſo great, owing to the perpetual actions of the ſtomach catenated with thoſe of the arterial ſyſtem (Princ. 13.), that it affects the next link of the aſſociate train, that is, the capillaries, with increaſed energy (Princ. 10.). Hence theſe laſt, in this kind of fever, are perpetually exerted with great increaſe of action.

§ XXI. When this torpor affects the ſecerning veſſels of the brain, Dr. Darwin thinks, that it is a cauſe of fever with arterial debility (Zoonomia, vol. ii. Supl. I. 10.) In this caſe, the ſecretion of ſenſorial power being more or leſs impaired, muſt occaſion languid actions of every part of the ſyſtem (Princ. 1.). In fevers with arterial debility, ariſing from this cauſe, the actions of the capillaries are diminiſhed along with the actions of the reſt of the ſyſtem. Hence the heat of the body is never above the natural ſtandard, and ſometimes it is even lower throughout the courſe of the diſeaſe; which phenomenon I have obſerved ſometimes in patients labouring under continued fever with arterial debility.

XXII. Though Dr. Darwin does not mention the torpor from exhauſtion of ſenſorial power in the arterial ſyſtem, as a cauſe of continued fever with arterial debility, yet, conſidering that the ſtimulus of the blood may be more or leſs increaſed, in conſequence of a greater or ſmaller quantity of oxygen, I make the following query: May not the ſenſorial power of irritation be accumulated for a while in the arterial ſyſtem, by the ſubduction of the ſtimulus oxygen? and afterwards by a ſudden application of this ſtimulus in a great degree, that is, by inſpiring at once a large quantity of pure oxygen gas, may not a violent exertion take place there, ſo as to produce an exhauſtion of the ſenſorial power of irritation, and to render the arterial ſyſtem unfit to derive from the brain and ſpinal marrow a proper quantity of ſenſorial power, (See note (*l*) Princip. 11.) which may therefore give riſe to a fever with arterial debility?

§ XXIII. When the torpor from exhauſtion of ſenſorial power affects other parts of the ſyſtem, which have their actions aſſociated with thoſe of the ſtomach, as for inſtance, the ſpleen, liver, &c. the ſtomach falls into a torpor, from defect of excitement of the ſenſorial power of aſſociation, and ſo the arterial ſyſtem, till a general torpor is formed, which conſtitutes the cold fit (§. xvii.). Now during the cold fit, an accumulation of ſenſorial power of aſſociation takes place in the ſtomach, arterial ſyſtem, &c. which overbalances this defect of excitement of the ſenſorial power of aſſociation: conſequently theſe parts are thrown into increaſed actions. This conſtitutes the hot fit, which, according to the accumulation of the ſenſorial power of aſſociation, and to the ſtimuli applied to it, will produce various effects (Princip. 4. and note (*n*) Princip. 15.) Thus either theſe increaſed actions may be proper, to reduce the ſenſorial power of aſſociation, accumulated during the cold fit, to its juſt limits, and at the ſame time to affect, by means of aſſociate motions, (Princip. 5. and 8.) that part which is torpid from exhauſtion of ſenſorial power, ſo as to reſtore its juſt degree of deriving ſenſorial power from the brain and ſpinal marrow; and then the fever is cured: or theſe increaſed actions merely reduce the ſenſorial power of aſſociation to its natural ſtandard, while the ſpleen, liver, &c, remain yet in a torpid ſtate, which, either by its degree, or by the concurrence of other cauſes, may induce again the torpor of the ſtomach, &c. in conſequence of defect of excitement of the ſenſorial power of aſſociation. Hence various kinds of intermittent fevers, or theſe increaſed actions, may be in ſuch a degree, as to occaſion ſenſation. Hence inflammatory fevers (Princip. 15.) Or laſtly, theſe increaſed actions may, in conſequence of their violence, produce a ſmaller, or greater, or complete exhauſtion of ſenſorial power, in ſome part eſſential to life. Hence various kinds of continued fever with arterial debility (§ XX, XXI, and XXII.), or even death (Princip. 15.).

§ XXIV. From § XVI.—XXIII. it will appear, that Dr. Darwin's Doctrine of Fever explains the various phenomena, which take place in this diſeaſe: viz. it accounts, 1ſt, for the formation of the cold fit, and the decreaſed actions of the ſyſtem, which are obſervable in it (§ XVII.): 2dly, for the formation of the hot fit, &c. (§ XVII.): 3dly, for the phenomena, which attend the hot fit of fevers with arterial ſtrength (§ XIX. and XXIII.): 4thly, for the intermiſſion of fevers (§ XXIII.): 5thly, for the change from intermittent to continued fevers (§ XXIII.): 6thly, for the phenomena which take place in ſome continued fevers with arterial debility; that is, the decreaſed actions of the ſtomach and arterial ſyſtem, as evinced by the want of appetite and weak pulſe; and for the increaſed actions of the capillaries, as evinced by the increaſed heat (§ XX.): 7thly, for the abſence of the increaſed actions of the capillaries, in ſome fevers with arterial debility, as evinced by the abſence of increaſed heat over the body (§ XXI.): Laſtly, for the long duration of continued fever, with arterial debility (§ XVIII.). See the foregoing caſes.

§ XXV. From the ſame doctrine of fever the moſt proper indications of cure are deduced.—1ſt, according to it, we muſt excite the ſyſtem in the cold fit of fevers, taking care, however, to proportion the ſtimuli to the ſenſorial power already accumulated. By theſe means we prevent the accumulation of ſenſorial power, which may give riſe either to the hot fit (§ XVII.), or to inflammation, &c. (§ XXIII.) Hence Dr. Darwin's expreſſion (Zoonomia, vol. i. ſect. 12.) "The "true means of curing fever (with ſtrong pulſe) muſt be "ſuch as decreaſe the action of the ſyſtem in the hot fit, "and increaſe it in the cold fit."

§ XXVI. 2dly. According to the ſame doctrine, during the hot fit of fevers with arterial ſtrength, we are led to diminiſh the increaſed actions of the ſyſtem; ſince by this means we prevent the inflammation, which may ariſe during the hot fit in conſequence of theſe increaſed actions, and various other diſorders (§ XXIII.). Hence Dr. Darwin ſays (Zoonomia, vol. ii. Supl. 1, 16, 9) "The cure of fever with ſtrong pulſe (in the hot fit) "conſiſts in the repeated uſe of veneſection, gentle ca- "thartics, diluents, &c."

§ XXVII. 3dly. According to the ſame theory, it appears, that the cure of fevers with arterial debility and increaſed actions of the capillaries (§ XX.) conſiſts in reſtoring the energy of the ſtomach and arterial ſyſtem, and in decreaſing the morbid increaſed actions of the capillaries.

laries. The firſt of theſe is obtained, by exciting into action the torpid ſtomach (and conſequently the arterial ſyſtem) either directly, as by wine, opium, bark, &c. and food in ſmall repeated quantities; by ſlight electric ſhocks paſſed through it; by fomentations with water, heated to 96 or 100 degrees of Fahrenheit's thermometer; by exciting its power of aſſociation with other parts of the ſyſtem, as by a bliſter, or indirectly, as by the exhibition of emetics, or iced water, &c. Hence the remarkably good effects of wine, bark, emetics, &c. in the foregoing caſes of fever, chiefly in that of R. Feemiſton, under Dr. Hope's care. The ſecond of theſe indications is obtained by free admiſſion of cold air, and chiefly by the ablution with, or affuſion of cold water over the ſurface. Hence the manifeſt utility of the affuſion with cold water, ordered by Dr. Gregory in the foregoing caſes, and likewiſe of the affuſion of cold water, ſo much recommended by Dr. Currie *(p)*. When theſe two means,

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(p) Dr. Currie conſiders the affuſion of cold water as a powerful ſtimulus, by means of which the ſpaſm of the extreme veſſels of the ſurface of the body, and of the various cavities of it, is diſſolved, and conſequently the morbid heat, accumulated under the ſkin, is carried off, partly by the ſudden and general evaporation, and partly by the ſenſible and inſenſible perſpiration (the action of the capillaries being reſtored) &c. (Med. Reports, Second Edit. p. 177.) This account of the operation of the cold water affuſion, however ingenious it may be, does not ſeem to be juſt. For though the aridity of the ſkin ſeems to countenance the exiſtence of a ſpaſm in the capillaries, preventing the free paſſage of the perſpirable matter and animal heat, yet the experiments of Dr. Alexander, as Dr. Darwin mentions (Zoonomia, vol. ii. Claſſ. I. 1, 2, 3, and Art. III, 2, 4.) prove, that there is no ſuch ſpaſm in the capillaries impeding the free paſſage of the perſpiration and animal heat, when the heat of the body is above its natural ſtandard; nay, in ſuch caſes, the diſcharge of the perſpirable matter is greater, than when it ſtands in drops upon the ſkin; therefore, the dryneſs of the ſkin in the hot ſtage of a fever is not to be aſcribed to the ſuppreſſion of the perſpirable matter; but 1ſt, to the great evaporation of this perſpirable matter, in conſequence of the increaſed heat; and 2dly, to its greater abſorption, in conſequence of the increaſed energy of the

means, viz. the invigorating the actions of the ſtomach, &c. by ſmall repeated doſes of ſtimuli, and the weakening the energetic actions of the capillaries of the ſkin, by ablution with or affuſion of cold water, are uſed conjointly, they are found to be of the greateſt utility in the cure of fevers of this kind.

§ XXVIII. Laſtly, from Dr. Darwin's doctrine, it appears, that in fevers, with arterial debility and decreaſed actions of the capillaries (§ XXI.) the cure conſiſts

the abſorbents in this caſe. Hence the affuſion of cold water does not act as a powerful ſtimulus, by which the ſpaſm of the capillaries is diſſolved; but as a powerful mean, by which the morbid increaſed actions of the capillaries of the ſkin, and of the cutaneous abſorbents, and by aſſociation of the capillaries and abſorbents of the various cavities of the body, are conſiderably decreaſed, in conſequence of the ſudden ſubduction of the ſtimulus *heat* from the ſurface of the body.

The reduction of the heat of the body, ſubſequent to that application, as well as to the ablution with cold water, is not to be aſcribed to its free paſſage, owing to the reſolution of the ſpaſm, &c. but at firſt to its communication from the ſurface of the body to the water applied to it, and afterwards to the decreaſed formation of the animal heat, owing to the reduction of the morbid increaſed actions of the capillaries, both of the ſkin and of the various cavities of the body, in conſequence of the application of cold water.

The abatement of the thirſt is not to be aſcribed to the diſſolution of the ſpaſm of the extreme veſſels of the mouth, fauces, and ſtomach, but to the diminiſhed diſcharge of the perſpirable matter, in conſequence of the decreaſed actions of the cutaneous capillaries produced by the cold water.

The reduction of the frequency of the pulſe, and its returning vigour, are not produced by the removal of the cauſe of the reaction or ſpaſm, but by the ſtop of the great waſte of ſenſorial power in the morbid increaſed actions of the capillaries and abſorbents, which ſenſorial power, being now derived from theſe veſſels to the arterial ſyſtem, increaſes its energy. Therefore the immediate operation of the affuſion of cold water upon the ſkin is not ſtimulating, but debilitating; and ſo far is ſimilar to the operation of cold air, though perhaps in a greater degree in a given time. The account given by Dr. Brown (Elem. of M. § 258, note (c) of a patient labouring under a ſynocha, who flew naked out of the houſe in a very keen froſt with ſnow upon the ground, and whoſe ſymptoms, in conſequence of it, were abated, may throw ſome light upon the ſubject.

ſiſts in reſtoring the energy of the ſyſtem, but particularly of the ſecerning veſſels of the brain. Hence all thoſe ſubſtances, which may have the power of exciting theſe veſſels, will be uſeful in this kind of fevers. Opium and wine are ſuppoſed by Dr. Darwin, to poſſeſs this power (Zoonomia, vol. ii. Supl. I, 16, 9.). In this kind of fever Dr. Darwin recommends alſo hot fomentations to the head, ſmall electric ſhocks paſſed through it, and ſmall bliſters. Might not the warm bath be uſed with utility in theſe fevers? The reſpiration of oxygen gas, diluted with atmoſpheric air (ſays Dr. Darwin), would be uſeful in ſuch fevers (Zoonomia, vol. ii. Supl. I, II, 7.). Might not this remedy, when well managed, be found uſeful in thoſe fevers, which may ariſe from the exhauſtion of the ſenſorial power of irritation in the arterial ſyſtem? (See § XXII.) The utility of inſpiring oxygen gas, diluted with atmoſpheric air, in fevers with arterial debility, is related by Dr. Thornton (ſee Dr. Beddoes's Conſiderations on the Medical Powers of factitious airs, part IV. and V. p. 135.).

§ XXIX. From the explanation given §. II—VII. it is, I think, evident;—1ſt. That by means of Dr. Cullen's doctrine of fever we cannot account for the phenomena, which take place in this diſeaſe—2dly. That from this doctrine we cannot draw any proper indication of cure in it. Likewiſe from what is contained in § IX.—XV. it will appear—1ſt. That Dr. Brown's Theory of Fever does not account either for certain phenomena, which are obſervable in the hot fit of intermittent fevers, or for the increaſed heat over the body in ſome continued fevers with arterial debility—2dly. That from this doctrine we cannot draw what may be called a complete indication of cure in fevers. For it always rejects a remedy, which is ſometimes uſeful; and uniformly recommends one, which is at times, or generally, noxious in the hot fit of intermittent fevers:—And laſtly, it always rejects one of the moſt uſeful remedies in the cure of ſome continued fevers with arterial debility; and alſo of intermittent fevers, when uſed during the hot fit, when the heat of the body is above the natural ſtandard, &c. But from the account given § XVI.—XXIII. as mentioned § XXIV.—XXVIII. it is manifeſt, that Dr. Darwin's Theory of Fever—1ſt. Accounts for the various phenomena obſervable in this diſeaſe—2dly. Affords the moſt proper indications of cure in it; and at the ſame time explains the operation of the remedies, by which theſe indications are fulfilled.

CASES OF ACUTE RHEUMATISM,

UNDER DR. GREGORY'S CARE.

M. STEWART, aged 20, was admitted into the hoſpital on the 2d of January 1799, with the following ſymptoms: Violent pain in her breaſt, elbows, knees, and ankles; the right elbow and both knees ſomewhat ſwelled; pulſe 96, of moderate ſtrength; ſleep bad; thirſt, and increaſed heat over the body. She was ordered to take ſome ſaline draughts through the day, and an opiate with a few drops of antimonial wine at bed-time. Theſe medicines were repeated every day till the 5th, and though profuſe ſweats were procured by them, the pains did not abate. She now had ℥x. of blood taken from her, and was ordered to repeat the ſaline draughts and opiate. On the 6th, the pains of the arms were relieved, but thoſe of the legs were rather worſe. She had ℥xii. more of blood taken from her, but the pains were not abated. On the 8th, the pains being ſtill ſevere, the ſkin hot, the pulſe quick, and of moderate ſtrength, ſhe had again ℥x. of blood taken from her. On the 9th, the pains being ſtill ſevere, pulſe 120, and of natural ſtrength, belly bound, ſhe was ordered a ſmart purge, and a bliſter to the right ſide, which was very painful. On the 12th, the pains were ſtill ſevere. Ordered to loſe ℥xii. of blood. From this day till the 22d, the pains were much abated, and ſhe remained pretty eaſy in other reſpects; but on the 22d, the pains returned in her legs, and continued ſo though with ſome remiſſions till the end of January, when ſhe was reſigned to Dr. Hope, under whoſe care ſhe continued for a long time, before ſhe got well enough to leave the hoſpital.

UNDER DR. HOPE'S CARE.

El. M'Kenzie, aged 16, was admitted on the 15th of April, 1799, with the following ſymptoms: Severe pains in the head, ſhoulders, arms, back, and legs, which were aggravated during the night; pulſe 100, of natural ſtrength; bad appetite. This affection was of about five days ſtanding. On the 16th, ſhe had an epiſtaxis to the amount of ℥iii. of blood, and was bled on this day to ℥viii. and ordered to take a purge. On the 17th, all the ſymptoms were much abated, yet the pains ſtill perſiſted, though in a much leſs degree. Ordered to continue the purge, and to uſe the warm bath to her feet. On the 20th, after the application of a bliſter to the back, all the ſymptoms were conſiderably abated. On the 21ſt, ſhe began to take ſome of the tinct. ferri ammon.; and on the 28th was diſmiſſed, cured.

UNDER DR. RUTHERFORD'S CARE.

J. Brown, aged 24, was admitted on the 4th of June, 1799, with the following ſymptoms: Pains in the larger joints of both upper and lower extremities; pulſe of moderate ſtrength and velocity; other functions nearly in their natural ſtate. This affection had commenced four days before. On the 5th, ſhe was ordered to take a pill of ½ a gr. of antim. tart. and gr. jſs. of opium at bed-time. On the 6th, ſhe took a purge, repeated the pill, and was bliſtered in both legs. The pains never were abated, and occaſionally ſhifted from one part to another. On the 11th, the pains being rather more ſevere, the heat of the body much increaſed, the pulſe quickened, the tongue foul, &c. ſhe was ordered to loſe ℥ix. of blood, and to continue the pill. On the 12th, the ſymptoms were much the ſame, and even ſome parts of her body were extremely painful. On this day the pill was omitted, and ſhe was ordered to take through the day ſome ſaline draughts, and at bed-time a ſweating powder. From this day till the 19th, ſhe had copious ſweats; but the pains were not much decreaſed. On the 20th, all the ſymptoms were much reduced. Ordered to take ſome bark and a bitter infuſion, which ſhe uſed till the 29th, when ſhe was diſmiſſed.

UNDER DR. DUNCAN'S CARE.

Ann Buchanan, aged 32, was admitted into the hoſpital with an inflammatory ſore throat, on the 14th of November, 1799. She was ordered to take an opiate at bed-time. On the 16th, the throat was better, as ſhe had diſcharged ſome purulent matter from it on the 14th, from which ſhe had gotten ſome relief, and a gargle had been uſed during the 15th and 16th: but on this day ſhe became affected with pains in the ſhoulders, notwithſtanding which the opiate was continued. On the 17th, the pains in the ſhoulders were worſe, and now the elbows were alſo affected with pains; the pulſe 100, and of good ſtrength; the heat of the body above the natural ſtandard, &c. Ordered to loſe ℥xii. of blood, to take at bed-time pulv. ipec. comp., to have a flannel ſhirt, and to drink the decoction of guaiacum. On the 18th, the pains were not abated, though ſhe had ſweated much on the preceding night. Ordered to repeat the ſweating powder, and the decoction of guaiacum. On the 19th, the pains were about the ſame; pulſe 120, of tolerable ſtrength; belly bound. Ordered to omit the medicines, and to take a purge. On the 20th, the pains were ſtill very ſevere; pulſe 112, and hard. Ordered to loſe ℥xii. of blood, and to take an opiate at bed-time. On the 21ſt and 22d, ſhe was more eaſy. On the 23d, the pains returned with great ſeverity. On the 24th, the pains continued ſevere; the pulſe was 100, and hard. Ordered to loſe ℥xii. more of blood. On the 25th, the pains were little abated; the pulſe was 108, and ſmall. Ordered to take ſome bark thrice a day, and an opiate at bed-time. Theſe medicines were uſed for a conſiderable time with little variation. But the pains, though more abated, uſed to return now and then, and even ſometimes they were rather aggravated; at laſt ſhe was diſmiſſed, about the 21ſt of January, 1800.

DR. CULLEN'S THEORY OF ACUTE RHEUMATISM.

§ XXX. The proximate cauſe of this diſeaſe, according to Dr. Cullen (F. L. § 457.), is the ſame with that of other inflammations not depending upon direct ſtimulus, which is thus expreſſed by him (F. L. § 245.) "A "ſpaſm of the extreme arteries, ſupporting an increaſed "action in the courſe of them, may therefore be con-"ſidered as the proximate cauſe of inflammation." That ſpaſm of the extreme arteries, and the conſequent increaſed action in the courſe of them, conſtitute the vis medicatrix naturæ, which is excited to remove the noxious effects of the remote cauſes (F. L. § 244.) *(q)*. Theſe circumſtances are more remarkable in Rheumatiſm. (F. L. § 246.)

§ XXXI. The phenomena, which are obſervable in acute rheumatiſm, cannot be explained by this theory. For, if we ſuppoſe, that the increaſed actions of the ſyſtem, &c., which appear in this diſeaſe, depend on the ſpaſm of the extreme veſſels, and if this ſpaſm be of the ſame nature with that, which Dr. Cullen conſiders as the proximate cauſe of fever, which ſeems to be the caſe from what he ſays (F. L. § 243.), it is dependant on an atony of the extreme arteries, *i. e.* it muſt exiſt when an atony of theſe veſſels exiſts, and *vice verſâ*. Now, during the firſt days of an acute rheumatiſm, the extreme veſſels, chiefly of thoſe parts which are the principal ſeat

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(q) Cold, which is looked upon by Dr. Cullen as the remote cauſe of acute rheumatiſm, never produces this diſeaſe, but when it is ſucceeded by heat. See § xxxv. note *(s)*.

of the diſeaſe, far from being affected with an atony, are endowed with morbid increaſed energy, as is evinced by the increaſed heat. See § X. and XXVII. note *(p)*. Conſequently, there being no atony, the ſpaſm does not exiſt. Therefore, the increaſed actions of the ſyſtem &c. are produced by ſome other cauſe. Farther, how can we account for the manifeſt redneſs of the inflamed parts during an acute rheumatiſm, when we ſuppoſe, that a ſpaſm or conſtriction of the extreme arteries takes place throughout the whole courſe of the diſeaſe? How can we explain the ſweats, which (as Dr. Cullen ſays) occur early in the courſe of the diſeaſe, if we ſuppoſe, that the extreme veſſels are affected with a ſpaſm or conſtriction? In ſome of the foregoing caſes, copious ſweats were procured, yet the diſeaſe did not ceaſe; which ought to have been the caſe, if acute rheumatiſm depended on the ſpaſm of the extreme veſſels.

§ XXXII. From Dr. Cullen's doctrine of acute rheumatiſm no proper indication of cure can be deduced. For if the ſpaſm, and the conſequent increaſed actions of the large arteries, conſtitute the *vis medicatrix naturæ*, and if this be excited to remove the noxious effects of the remote cauſes (F. L. § 244.) of rheumatiſm, the indications which follow are, 1ſt, to ſecond the *vis medicatrix*, when it is not ſufficient to remove theſe noxious effects; 2dly, to decreaſe it, when it is in a greater degree, than is neceſſary to overcome theſe noxious effects.

§ XXXIII. Hence, according to the firſt indication, we ought never to diminiſh the increaſed actions of the arterial ſyſtem in acute rheumatiſm, when the remote cauſes have acted in a great degree, that is, in the higheſt degree of the diſeaſe; becauſe, in this caſe, the noxious effects of the remote cauſes are great, therefore the reaction

action to overcome them muſt likewiſe be great (*r*). But how does it agree with the plan of cure for acute rheumatiſm laid down by Dr. Cullen (F. L. §. 462—465.)? How does it coincide with the abatement of all the ſymptoms after the bleeding and purging, in the caſe of Eliz. M'Kenzie, under Dr. Hope's care?

§ XXXIV. The ſecond indication, though not ſo abſurd, is, however, like the firſt, ſeldom productive of good effects, and ſometimes may prolong the diſeaſe for a greater length of time, than that in which it might be cured, ſince it enforces the debilitating plan in a greater degree than is neceſſary, therefore the patient's recovery will be ſlower, &c.

DR. BROWN'S DOCTRINE OF ACUTE RHEUMATISM.

§ XXXV. Acute rheumatiſm, according to Dr. Brown, is a phlegmaſia (Elem. of M. § 387.), in which there are preſent both pyrexia and inflammation (Elem. of M. § 332.). The pyrexia, or general ſthenic affection of the ſyſtem in acute rheumatiſm, is produced by the various

(*r*) It may be ſaid, that the debilitating plan muſt be uſed in acute rheumatiſm, to counteract the bad effects, which might reſult from the morbid increaſed actions of the ſyſtem. But if the *vis medicatrix*, that is, the ſpaſm of the extreme arteries, and increaſed actions in the larger ones, be the cauſe, by which the noxious effects of the remote cauſes are removed (F. L. § 244); it is evident, that, when we decreaſe either the ſpaſm of the extreme arteries, or the increaſed actions of the larger ones, we allow thoſe noxious effects of the remote cauſes to perſiſt, and ſo far the diſeaſe, viz. acute rheumatiſm.

noxious ſthenic powers (*s*), and never ſucceeds to the inflammation; which laſt ariſes likewiſe from the ſame noxious powers (Elem. of M. § 171), and is to be conſidered as a part of the general diatheſis, which is in a greater degree in the inflamed part than in any other equal part (Elem. of M. § 169.); therefore, as the pyrexia and inflammation in acute rheumatiſm depend on the ſthenic diatheſis, the ſolution of this will produce the ſolution of the diſeaſe (Elem. of M. § 390.)

§ XXXVI. Dr. Brown's doctrine of acute rheumatiſm, which is the ſame with that of ſthenic inflammation (Elem. of M. § 207), does not account for ſome phenomena obſervable in the diſeaſe. That in acute rheumatiſm there is an increaſed excitement over the whole ſyſtem, and that in the inflamed parts the excitement is greater than in any other equal part, we agree with Dr. Brown; but we cannot admit the account of ſthenic inflammation, given by Dr. Brown (Elem. of M. § 207), as capable of explaining all the phenomena obſervable in acute rheumatiſm. For he aſcribes this inflammation to the mere increaſe of force of the contractions, and narrowneſs of the ſpace of the veſſels, through which the blood has to paſs, and from which the pain ariſes. Now

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(*s*) Cold, which is conſidered by Dr. Cullen as the moſt common remote cauſe of acute rheumatiſm, (F. L. § 458) is never to be looked on as ſuch, at leaſt in Dr. Cullen's acceptation: becauſe the operation of cold is always debilitating, from its loweſt to its higheſt degree, as is evinced by the quieſcence or torpor induced by it in any part of the ſyſtem where it is applied; therefore it cannot produce acute rheumatiſm, or any other diſeaſe of increaſed energy, &c. which have erroneouſly been aſcribed to it, though they are owing to the ſucceeding heat, which then acts with much more violence. (See the Elem. of Medicine of Dr. Brown.)

Hence cold may, with greater propriety, be termed a prediſpoſing cauſe of the operation of heat, than a remote cauſe of acute rheumatiſm; becauſe, when cold is not ſucceeded by heat, the diſeaſe does not follow.

if he ſuppoſe, that the inflammation of the joints in acute rheumatiſm conſiſts merely of the increaſed excitement of the veſſels of thoſe parts, by which they are diminiſhed in their diameters, &c. (Elem. of M. § 207,) how can the ſwelling of the inflamed joints be explained? if the inflammation conſiſt in a conſtriction of the veſſels, occaſioned by the increaſed excitement in them, &c. the inflamed parts, far from being ſwelled, ought to be reduced in ſize.

§ XXXVII. The influence of the pains in the inflamed joints, during an acute rheumatiſm, cannot be accounted for on Dr. Brown's principles. For he ſays, Elem. of M. § 21, and 122, note *(h)*, that diſagreeable ſenſation debilitates; now, as the pains, which take place in the inflamed parts, through the courſe of an acute rheumatiſm, are diſagreeable ſenſations, they ought to decreaſe the excitement of thoſe parts, and thereby the inflammation. But this is not the caſe, ſince the inflammation always increaſes in the *direct ratio* of theſe pains. See § XLI.

§ XXXVIII. Some of the ſymptoms, which are obſerved in ſthenic diſeaſes, are not properly explained by Dr. Brown. For he ſuppoſes, that the cold ſtage, &c. which precede ſuch diſeaſes, are owing to a higher degree of excitement in the brain (Elem. of M. § 336). But if, during the cold ſtage, there ſhould be any high degree of excitement in the brain, it ought to be made manifeſt in all the functions of the ſyſtem; that is, the pulſe, during that cold ſtage, ſhould be full and ſtrong, &c.: which, however, is not the caſe; nay, it is quite the reverſe, not only in the pulſe, but alſo in the reſt of the functions, which in the cold ſtage of a fever with ſtrong pulſe (*Pyrexia*, according to Brown) are always affected with torpor or decreaſed energy (Zoonomia, vol. ii. p. 14, and 541). It is from this torpor that the paleneſs and ſhrivelling of the ſkin, the clearneſs and ſmall quantity of the urine, &c. during the cold ſtage of any ſthenic diſeaſe, ariſe, and not from a degree of the ſthenic diatheſis ſhutting up the ends of the veſſels, as Brown ſays (Elemen. of M. § 163.) ſince no ſuch diatheſis yet exiſts.

§ XXXIX. The dryneſs of the ſkin during the hot ſtage of the ſame diſeaſes is not to be aſcribed to the impeded perſpiration, in conſequence of the conſtriction of the extreme veſſels, as Brown ſuppoſes, ſince the perſpiration in ſuch caſes is not ſuppreſſed. "Defect of " perſpiration (ſays Dr. Darwin, Zoon. vol. ii. p. 699.) " can only exiſt, when the ſkin is cold." This phenomenon is owing to the great abſorption and great evaporation of the perſpirable matter; ſee § x. note *(l)* and § XXVII. note *(p)*. The increaſe of heat, then obſervable, does not ariſe from the conſtriction of the extreme veſſels preventing it from paſſing off by the ſkin, as Brown ſays (Elem. of M. § 340.); but from the increaſed energy of all the functions, particularly thoſe of the ſecretory organs. The thirſt is not owing to the conſtriction of the excretory veſſels of the throat, as Brown ſuppoſes (Elem. of M. § 341.); becauſe there is no ſuch conſtriction, as is evinced by the preſence of a mucus in the throat more viſcid than is natural, which would not be the caſe if the veſſels were conſtricted. But it may be aſcribed to the great diſſipation of the aqueous fluid from the body, during the hot ſtage of the ſthenic diſeaſe, in conſequence of the increaſed diſcharge of the perſpirable matter. See § XXVII. note *(p)*.

§ XL. From Dr. Brown's Theory of Acute Rheumatiſm we cannot draw a complete indication of cure in this diſeaſe. For, if we ſuppoſe, that this diſeaſe conſiſts only of an increaſed excitement of the ſyſtem, and more ſo of the parts inflamed, the indication which follows is, to decreaſe that excitement, or to reduce it to its proper limits, both in the general ſyſtem, and in the parts inflamed. Therefore, general and topical bleedings, together with the application of ſubſtances which are leſs ſtimulating than the natural agents, are the only means, to which recourſe muſt be had in the cure of acute rheumatiſm. But there are many caſes of acute rheumatiſm, which will not be cured by theſe ſimple means. I have ſeen two or three caſes of this diſeaſe, where general and topical bleedings, together with other debilitating means, were uſed; whereby the excitement, both of the ſyſtem in general, and of the inflamed parts likewiſe, was reduced, even below its proper limits; yet the diſeaſe was not cured, ſince the patients were ſtill troubled with pains (*t*).— Dr. Fordyce aſſerts, that, when it was the practice to bleed largely in acute rheumatiſm, a metaſtaſis frequently took place to the interior parts of the body, and deſtroyed the patient; and adds, that during the laſt fifteen years of his practice this has rarely happened, as he has intirely left off bleeding in the acute rheumatiſm. 3d Diſſ. on

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(*t*) That theſe pains were not produced by the diatheſis aſthenica, into which the ſthenic might have been converted, in conſequence of the debilitating plan employed to remove the morbid increaſed excitement, &c. which exiſted before, as Dr. Brown ſays (Elem. of M. § 181.), is evident, becauſe the ſtate of all the functions did not ſhow marks of any conſiderable debility, by which the actions of the inflamed parts could be ſo much decreaſed, as to induce pain. Farther, the excitement, being reduced from a higher degree to a lower than was proper, muſt have paſſed through its juſt degree, and then the pains ought to have ceaſed; which, however, did not take place. Therefore, theſe pains are to be aſcribed to ſome other cauſe, occaſioned by the increaſed actions of the inflamed parts, as for inſtance, ſome coagulable lymph, or cretaceous or calcareous matter, which was left on the membranes after their inflammation, &c. See § XLV.

Fever.—This, I believe, will always be the caſe, when acute rheumatiſm is in a violent degree, and when bleedings, and other means, which merely decreaſe the morbid increaſed excitement, are only uſed. Hence, beſides the excitement, there is ſome other cauſe, which muſt be removed. Therefore, the removal of the morbid increaſed excitement, as well as of that other cauſe, will conſtitute the complete cure of the diſeaſe. This will be more fully elucidated hereafter (§ XLIV. and XLV.).

DR. DARWIN'S DOCTRINE OF ACUTE RHEUMATISM.

> " So ſome tall rock o'erhangs the hoary main,
> " By winds aſſail'd, by billows beat in vain,
> " Unmov'd it hears, above, the tempeſts blow,
> " And ſees the wat'ry mountains break below.
>
> POPE.

§ XLI. This may be comprehended under the following principles:

1ſt. Acute rheumatiſm is introduced by a cold ſtage, during which a more or leſs conſiderable torpor prevails in the ſyſtem, and then a greater or ſmaller accumulation of ſenſorial power is formed (*u*). Zoon. vol. ii. Supl. I. 1. 2.

2d. This

(*u*) This accumulation of ſenſorial power may be produced, either by the direct ſubduction of the natural ſtimuli in a great degree, as by the application of cold; or by a previous application of ſtimuli

2d. This cold ſtage is followed by a hot fit, occaſioned, either by an evident application of ſtimuli in a great degree, or by the mere increaſe of irritability, there being no remarkable ſtimuli applied to it *(x)*. Zoon. vol. ii. Supl. I. 1. 5.

3d. Theſe two ſtates conſtitute what may be termed an irritative fever, or ſimple ſynocha, which precedes the inflammation in acute rheumatiſm *(y)*. Zoon. vol. ii. Claſſ. II. 1. 2. 1.

4th. During the hot ſtage, increaſed actions take place in the ſyſtem, which are in a greater degree in thoſe parts, where either a greater quantity of ſenſorial power has been accumulated, or where the ſubſequent application of ſtimuli has a greater acceſs. In conſequence of theſe morbid increaſed actions, pain is excited, which is a new ſtimulus, by which the ſenſorial

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ſtimuli in a high degree, and afterwards by a ſudden ſubduction of them, as when any perſon much overheated expoſes himſelf ſuddenly to cold. See § XVI. Princ. 14. on Fevers, note *(m)*. But if ſtimuli be abſolutely ſubducted from that accumulation of ſenſorial power, increaſed exertion of the parts, &c. that is acute rheumatiſm, does not follow. See § XXXV. note *(s)*.

(x) There muſt be ſome ſtimuli applied to the accumulated ſenſorial power of irritability, though in a ſmaller degree than the natural ones, otherwiſe the increaſed exertion or hot fit would not follow: § XXXV. note *(s)*.

(y) Hence may be underſtood that poſition of Dr. Brown—that in the phlegmaciæ, the general affection of the ſyſtem or pyrexia, never ſucceeds to the inflammation. However, it muſt be remarked, that the general affection of the ſyſtem, which precedes the inflammation, is not the ſame with that which ſubſiſts after the inflammation has taken place, ſince the laſt is the effect of two conjoined cauſes, that is, ſenſorial powers of irritation and ſenſation, while the firſt is the effect of one of thoſe cauſes only, that is, ſenſorial power of irritation. Therefore, in this the pulſe is ſimply full and ſtrong, while in that it is full, ſtrong, and hard (Zoon. vol. ii. Claſſ. II. 1. 2.)

rial power of ſenſibility is excited into action (§ XVI. Princ. 3d. on Fevers.) Hence new motions of theſe parts are generated, which, along with the production of new fibres, and diſtenſion of the old ones, conſtitute inflammation (Zoon. vol. i. Sect. 33. 2. 1.) Now this ſenſorial power of ſenſibility extends its influence over the whole ſyſtem, and hence the fever, which was before a ſimple irritative fever, is changed into a ſenſative irritated fever. Zoon. vol. ii. Claſſ. II. 1. 2.

5th. The inflammation in acute rheumatiſm is ſuppoſed to be a conſequence of a tranſlation of morbid action from one part of the ſyſtem to another. Zoon. vol. ii. Claſſ. IV. 1. 2. 16.

§ XLII. From the preceding principles, the explanation of the various phenomena, which take place in acute rheumatiſm, may be eaſily underſtood. Thus the cold ſhivering; the general laſſitude; the ſmall quantity of urine, and its paleneſs; the coldneſs of the extremities, &c.; which uſher in acute rheumatiſm, are accounted for by the 1ſt Principle. The increaſe of heat which follows the cold ſtage, and the ſtrength and fulneſs of the pulſe after the hot fit is formed, are explained by the 2d and 3d Principle. The difference of the pulſe before and after the inflammation is explained in Princ. 3d. note *(y)*. The formation of the inflammation in acute rheumatiſm, the ſwelling and redneſs of the inflamed parts, the great increaſe of heat of the body, and the tough ſize of the blood, are accounted for by the 4th Principle. The inflammation attacking two ſimilar parts, as both ankles or wriſts, theſe attacks being in ſucceſſion to each other, and its terminating very rarely in ſuppuration, are explained by the 5th Principle. See Zoon. vol. ii. Claſſ. IV. 1. 2. 16.

§ XLIII. The indications of cure, which may be deduced from the ſame principles, are thoſe, which ſeem the moſt proper. The cold ſtage of acute rheumatiſm is of a ſhort duration, therefore the means of removing this part of the diſeaſe are not detailed. However, to overcome this, we ſhould employ the very ſame means, recommended to remove the cold fit of fevers with ſtrong pulſe. See § xxv.

§ XLIV. When the diſeaſe is completely formed, that is, after the inflammation of the joints has taken place, the pulſe is full, quick, and hard, an increaſe of heat is obſervable over the body, &c. two indications follow from the 4th Principle. The firſt conſiſts in decreaſing all the morbid increaſed actions of the ſyſtem, and particularly of the inflamed parts. This ought to be done according to the degree of energy of theſe morbid actions (z). By this we prevent the farther progreſs

of

(z) That in ſuch caſes there is an excitement over the whole ſyſtem, and particularly in the inflamed parts, greater than that which is natural, is atteſted by every one, who has carefully attended to the ſtate of the functions: and that bleeding, purging, and other debilitating means, are uſeful under theſe circumſtances, is equally confirmed by every candid practitioner. However, the author of the Science of Life thinks, that he has made a great improvement on the ſyſtem of Brown, by rejecting the exiſtence of ſthenic diſeaſes. Hence he blames bleeding, even in the moſt violent degree of a peripneumony, or acute rheumatiſm, &c. (Science of Life, p. 144.) and recommends opium and other ſtimuli (Science of Life, p. 47.) ſince he conſiders peripneumony, acute rheumatiſm, &c. as diſeaſes from exhauſtion of excitability. Theſe ideas muſt be rejected without the ſmalleſt heſitation, as contrary to the experience of every obſerving phyſician, and at the ſame time as devoid of any ſolid foundation. For what is the ſtate of the pulſe of a patient labouring under an acute rhumatiſm, during the firſt days of the diſeaſe, and when no medicines whatever have yet been uſed? Is it not full, ſtrong, quick, and hard? Does this pulſe ſhow any debility in the arterial ſyſtem? What is the ſtate of the other functions? Is not every ſecretion increaſed? Is not the abſorption of the thinner parts of every ſecreted fluid increaſed? Do not the greater viſcidity of the

mucus

of the inflammation, and at the ſame time the exhauſtion of ſenſorial power, which might ariſe from theſe morbid increaſed

mucus of the fauces, and the redneſs of the urine, ſhow it? How can it be conceived, that the ſecretory and abſorbent veſſels, affected with debility, could perform their functions with ſo great an energy? But let us examine the reaſoning of the author of the Science of Life, by which he is led to reject the exiſtence of diſeaſes of exceſſive excitement: p. 43 he ſays, "although the ſtimulant powers " may be applied, in an exceſſive degree, to the middle or healthy " ſtate of the excitability, it is evident, that excitement never can be " exceſſive, for every degree of ſtimulant power, greater than is " neceſſary to produce health, muſt occaſion a degree of exhauſtion " proportionate to the exceſs." But how does a degree of ſtimulant power, greater than that which is proper, produce the proportionate degree of exhauſtion of excitability? Is it not by inducing actions, in the performance of which a greater quantity of excitability is expended than is proper? and muſt not theſe actions be more energetic, than thoſe in which much leſs excitability is expended; as for inſtance, the proper quantity of that excitability? or, in other words, muſt not the excitement, in ſuch caſes, be more violent, than that in which only a proper quantity of excitability is expended? Now if the excitement of any part of the ſyſtem, which precedes the exhauſtion of excitability there, be more violent than that, which conſtitutes the healthy ſtate of the part, it is evident, that there is exceſſive excitement. Mr. Maclean (Science of Life, p. 139) ſays, "the functions of life can only be performed in " a due or deficient degree;"—"to ſay that they can be performed in " exceſſive degree, is as great a contradiction in terms, as exceſſive " virtue, or exceſſive joy; the one is vice, the other pain." But what can he conclude from this, except that exceſſive excitement is different in degree, though ſimilar in nature, from that in which perfect health conſiſts? afterwards he adds, "when a degree of ſtimulant " power, higher than is neceſſary to the ſtate of health, is applied, " the functions of life will be performed with more than uſual " vigour, before they fall into a ſtate of indirect debility." Now I aſk, whether that degree of vigour of the functions, which precedes indirect debility, and which is greater than uſual, be likewiſe a healthy degree, &c. that is, the ſame with that in which health conſiſts? if it be, why is it not followed by the ſame effects? in other words, why is this followed by indirect debility, while ſuch a ſtate does not follow when the functions are performed with their uſual degree of vigour? Again, Mr. Maclean ſays, "the action of the fibre may be " exceſſive, but its power cannot." (p. 139.) But can that action of the fibre ever exiſt without excitement, or effect of the exciting power acting upon the excitability? therefore, is not the action of the fibre an effect of its excitement or power? Now how can a moderate cauſe produce an exceſſive effect? is this again the correctneſs increaſed actions of the ſyſtem, and thus obviate its fatal conſequences. Hence bleedings and cathartics ought to be uſed, more or leſs, according to the general excitement, &c. ſo long as the ſtrength of the patient will admit them. In this ſtate all thoſe ſubſtances, which are called by Dr. Darwin *torpentia* (Zoon. vol. II. part iii. art. 7.), are to be employed: as cold air breathed into the lungs; cold water taken into the ſtomach, or uſed externally; food of leſs ſtimulus than the patient has been accuſtomed to; mucilaginous drinks, &c.

rectneſs of thinking of the author, who talks of *want of argument*, and *correct reaſoning* in the Zoonomia? Hence it appears, that peripneumony, acute rheumatiſm, and other diſeaſes, properly termed by Dr. Brown ſthenic diſeaſes, are not diſeaſes of indirect debility, as Mr. Maclean has meant to eſtabliſh. Another improvement, which the ſame author ſuppoſes to have made on the ſyſtem of Dr. Brown, is his not admitting diſeaſes from accumulated excitability, in conſequence of the ſubduction of the natural ſtimuli (Science of Life, p. 135.). To this I ſhall only obſerve, that health conſiſts in a pleaſant and eaſy performance of all the functions, and diſeaſe in the unpleaſant or uneaſy performance of ſome or all of them. Now, on the ſubduction of the ſtimulus heat from the ſurface of the body, the actions of the cutaneous veſſels are decreaſed, and hence pain ariſes there; during which we muſt confeſs the function of thoſe veſſels is unpleaſant and uneaſy, viz. that it is not in its healthy ſtate. But as this morbid ſtate ariſes from the ſubduction of a natural ſtimulus, and conſequent accumulation of excitability, it is evident, that there are diſeaſes from accumulated excitability. Different effects cannot be properly aſcribed to one and the ſame cauſe; therefore morbid ſtates, which are manifeſtly different, or which, though apparently ſimilar, are in reality different, as is evinced by the different phenomena which ariſe from them on the application of the ſame agents, cannot be properly aſcribed to one ſingle morbid action. This, however, was overlooked in the *outrès* improvements made on Dr. Brown's doctrine, by Mr. Maclean, who has undoubtedly practiſed what Cowley ſays:

> "Variety I aſk not: give me one
> "To live perpetually upon."

§ XLV. After the firſt indication is fulfilled, that is, after the general excitement, &c. have been reduced, the ſecond indication follows; which conſiſts in promoting the abſorption of the new fibres, that conſtitute an eſſential part of the inflammation (Princ. 4. § XLIV.), and likewiſe of the coagulable lymph, and even ſome ſolid calcareous or cretaceous matter of the mucus, which lies on the membranes of the inflamed parts; being an effect of the great ſecretion of that mucus during the inflammation, and at the ſame time of the great abſorption of all its thinner parts, in conſequence of the great excitement, both of the ſecretory and abſorbent veſſels of thoſe membranes, which are the ſeat of the inflammation. By theſe means we accompliſh the reduction of the inflamed parts, and at the ſame time eradicate the cauſe of what is termed chronic rheumatiſm, which often ſucceeds the acute.

§ XLVI. This ſecond indication cannot be properly fulfilled, but when the firſt has already been obeyed; nay, in ſome caſes, that is, when acute rheumatiſm is in a violent degree, our following this indication, without the previous uſe of the firſt, will be noxious. For the ſecond indication conſiſts in promoting the abſorption of the new fibres, and of the coagulable lymph and calcareous matter of the mucus, which lie on the inflamed membranes. Now, if the veſſels, which are to receive theſe materials, be completely filled up, and be not emptied by means of the firſt indication, it follows, that this abſorption will not take place. Farther, as the means, which are employed to fulfil the ſecond indication, are ſuch as act by ſtimulating the abſorbents; and as the abſorbents then, though excited into increaſed actions, cannot take up thoſe new fibres, &c.; it follows, that in ſuch caſes we merely add more to the ſtimulating operation of the ſyſtem, and ſo far we increaſe the diſeaſe.

§ XLVII. Hence opiates, bark, ſudorifics (*a*) &c. exhibited in the beginning of acute rheumatiſm, that

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(*a*) That the good effects of ſudorifics in acute rheumatiſm are not to be aſcribed to their diminiſhing the diatheſis phlogiſtica, is evident from this, that they are noxious, when given in the beginning of the diſeaſe in ſome caſes. Dr. Darwin (Zoon. vol. ii. Claſſ. IV. 1. 2. 16.) ſays, "Sweats forced early in the diſeaſe do "injury:" and Dr. Cullen (F. L. par. 467.) recommends ſweating, after the phlogiſtic diatheſis has been taken off or diminiſhed by general bleedings. Now, if ſudorifics act by decreaſing the phlogiſtic diatheſis, far from being noxious, when that diatheſis is high, they ought to be uſeful. Therefore, the good effects of ſudorifics, in this as well as in any other ſthenic diſeaſe, are to be aſcribed to ſome other power they poſſeſs, which, from the circumſtances in which they are uſeful, ſeems to be that of promoting the abſorption of the new fibres, &c. ſee § XLV. and XLVI. Dr. Brown is of opinion, that the perſpiration is impeded in ſthenic diſeaſes; therefore he recommends ſweating as one good mean of reducing the ſthenic diatheſis, ſince by this the perſpiration is rendered free, and at the ſame time a great diſcharge of perſpirable matter is carried off along with the animal heat accumulated under the ſkin. But it was ſhown before (§ X. note (*e*) § XXVII. note (*p*) and § XXXIX.), that the perſpiration in ſuch caſes is not impeded. Dr. Brown, however, ſays (Elem. of M. par. 476.), that ſweating ſhould never be ordered, when the ſthenic diatheſis is high; for then it may induce indirect debility, in conſequence of the additional ſtimulus of heat, which accompanies the firſt part of the operation of ſweating: but when the diatheſis is moderate, he adviſes it; ſince then the noxious effect of that additional ſtimulus, is not only counterbalanced by the diſcharge of the perſpirable matter, which follows, but this laſt reduces, at the ſame time, the general excitement. That ſweating may ſometimes cure the diſeaſe, when the diatheſis is mild, even without any previous evacuation, cannot be doubted: but the explanation of it, given by Dr. Brown, is not juſt. For the diſcharge of the perſpirable matter is not impeded in ſuch caſes; therefore, the ſweating is ſuppoſed to that is, before the excitement of the ſyſtem is reduced by means of the firſt indication, are ſometimes noxious (*b*): while they are of the greateſt ſervice in this diſeaſe,

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produce an effect, which already exiſts. The following may, I think, explain the phenomenon.—When the diatheſis is mild, the veſſels are not completely filled up, and the new fibres produced in the inflamed parts, as well as the coagulable lymph, &c. are very ſmall in quantity. Therefore, a ſweating medicine being exhibited excites the abſorbents, which now take up the new fibres, &c. of the inflamed parts, as they are in a very ſmall quantity, and eaſily tranſmit theſe materials to the other veſſels, which have yet capacity enough to receive them. Hence the diſeaſe is cured. Bark, which is recommended by ſome practitioners, even early in the diſeaſe, acts as the ſudorifics do; conſequently will be either noxious, or uſeful, according to the diatheſis.

(*b*) Opium, with or without ipecacuanha, is recommended by Dr. Darwin (*Zoon.* vol. ii. Claſſ. IV. 1. 2. 16.) in acute rheumatiſm, after the patient is conſiderably weakened, that is, after the excitement has been much reduced by bleedings, purging, &c. In theſe circumſtances, opium acts by promoting the abſorption of the new fibres, &c. That opium is one great mean of promoting abſorption, when previous evacuations have been uſed, is evident from the account of various caſes given by Mr. Bromfield. See Chirurg. Obſerv. and Caſes, vol. i. p. 9—23.

But if this remedy be exhibited in the beginning of acute rheumatiſm, that is, when the excitement is yet in a high degree, and when no previous evacuations have been uſed, it cannot promote the abſorption, ſee § XLVI. and then its ſtimulating operation merely increaſes the morbid increaſed excitement more, and ſo far the diſeaſe.

Hence the propriety of what Dr. Darwin ſays (Zoon. vol. ii. Claſſ. IV. 1. 2. 16.) "Opium given early in the diſeaſe prolongs "it." The truth of this aſſertion may be ſeen, by looking over the foregoing caſes of acute rheumatiſm, under the care of Drs. Gregory, Rutherford, and Duncan, in which they exhibited opium in the beginning, and in which the cure was ſo deficiently obtained. The opiates in thoſe caſes never produced any good effects, and ſometimes evidently aggravated the ſymptoms, particularly the pains, notwithſtanding which opium is yet called ſedative, and as ſuch uſed by many phyſicians to relieve pains, which are produced by morbid increaſed actions of the ſyſtem; and though relief in ſuch caſes is never obtained, the propriety of ſuch an application is ſtill defended, *pro aris et focis!* Such is the power of medical belief! See § VII. note (*d*).

after the excitement of the ſyſtem has been decreaſed, that is, after we have, by means of the firſt indication, ſtopped the progreſs of the inflammation, and at the ſame time emptied the veſſels, and ſo rendered them fit to receive the new fibres, coagulable lymph, &c.

§ XLVIII. By practiſing theſe two indications:—1ſt. Diminiſhing the morbid excitement by bleedings, mild cathartics, free acceſs of cold air, and the exhibition of food of little ſtimulus, &c.—2d. Exciting the abſorbents (after the excitement had been reduced) by the exhibition of bark, ſudorifics, and opiates; by the warm bath one or twice a-day; by bliſters applied near the inflamed parts, &c.; I have cured three or four patients labouring under acute rheumatiſm, in leſs than a fortnight: and yet, in one of theſe patients, (a friend of mine) the diſeaſe was in a conſiderable degree; ſince the pains were ſo violent, as to prevent him from ſleeping for three or four days before I ſaw him; the pulſe was full, quick, and hard; the heat of the body much increaſed, &c.

§ XLIX. The explanation from § XXXI.—XXXIV. ſhows:—1ſt. That Dr. Cullen's doctrine of acute rheumatiſm does not account for the phenomena, which are obſervable in this diſeaſe.—2d. That from it no proper indication of cure can be juſtly deduced.

In a like manner what has been advanced from § XXXVI.—XL. proves:—1ſt. That Dr. Brown's theory of this diſeaſe does not explain ſome phenomena, which take place in it.—2d. That the indication, which follows from this doctrine, is not a complete one; ſince morbid ſymptoms ſtill appear, after the means, by which that indication is fulfilled, have been fully employed.

The account, however, given § XLI.—XLV. evinces: —1ſt. That Dr. Darwin's theory of imflammation, and conſequently of acute rheumatiſm, is ſufficient to explain the various phenomena, which appear through the courſe of the diſeaſe.—2d. That from it what may be termed a complete indication of cure in acute rheumatiſm is juſtly conceived, as evinced in § XLV. The treatment of the caſe of E. M'Kenzie, under Dr. Hope's care, with the ſucceſsful recovery of this patient within a few days, is another proof of what has been eſtabliſhed.

GENERAL CONCLUSION.

§ L. From what is contained in § XXIX. and XLIX. we may diſcover, how far ſuperior the improvments made in the ſcience of medicine, by the author of the Zoonomia, are to thoſe either of the induſtrious Dr. Cullen, or the ingenious Dr. Brown.

"Behold! amid the vegetable bloom,
"O Darwin, thy ambroſial rivers flow,
"And ſuns more pure the fragrant earth illume,
"As all the vivid plants with paſſion glow.

"Yes!—and, where'er with life creation teems,
"I trace thy ſpirit thro' the kindling whole;
"As with new radiance to the genial beams
"Of ſcience, iſles emerge, or oceans roll,
"And nature, in primordial beauty, ſeems
"To breathe, inſpired by Thee, the *philoſophic ſoul!*

"R. POLWHELE."

Botanic Garden, Part I. p. vii.

THE END.

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